

**Burden and Cost Calculations
for the
Unregulated Contaminant Monitoring Regulation
(2000-2005)**

**Supporting Documentation (Appendix B) for
“Information Collection Request for the
Unregulated Contaminant Monitoring Regulation”**

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A. UCMR Cost and Burden Summary

The universe of respondents for this cost analysis of the proposed Unregulated Contaminant Monitoring Regulation (UCMR) activities is clearly defined. In total, 3,574 public water systems (PWSs) will participate in UCMR, monitoring from year 2001 through 2005. The proposed UCMR will affect all 2,774 non-purchased Community Water Systems (CWSs) and non-purchased, Non-transient, Non-Community Water Systems (NTNCWSs) which serve more than 10,000 people (large systems); the 800 CWSs and NTNCWSs serving 10,000 and fewer people (small systems) selected through a statistical sample¹; and, the 56 States/Primacy Agencies.

The UCMR program has three components: Assessment Monitoring, Screening Survey, and Pre-Screen Testing. For all UCMR components, EPA will bear the costs of shipping and analysis for all small systems included in EPA / State Plans. *Assessment Monitoring*, the major component of the program, is comprised of three years of monitoring from 2001 to 2003. During this period approximately one-third of the affected systems will monitor in each of the three years. These systems will monitor for ten chemical and one microbiological contaminants which have analytical methods that are currently available. The *Screening Surveys* will monitor for a two separate lists of contaminants for which analytical methods are currently being refined. Two one-year rounds of Screening Survey monitoring will be conducted on a subset of approximately 600 of the Assessment Monitoring systems (both small and large), with 300 systems monitoring in each of the two years, 2002 and 2003. Finally, a set of up to 200 small and large systems will be selected to participate in one year of *Pre-Screen Testing* in 2004, which includes contaminants for which analytical methods are being developed. These systems will be chosen by the States as those most vulnerable to the Pre-Screen Testing microbiological contaminants. The actual implementation years for Screening Surveys and Pre-Screen Testing may vary due to method development schedules. The cost calculations presented in this document assume the UCMR implementation schedule that is described here. An illustration of this schedule is presented below in Figure 1. Program descriptions and estimation assumptions are presented in detail in this document.

The majority of regulated systems will only have to monitor during one of the five implementation years. Frequency of response varies with system source water and by which UCMR program component is being implemented. Ground water systems will sample and report twice during their year of Assessment Monitoring. Surface water systems will sample and report four times during their year of Assessment Monitoring. Systems conducting Screening Surveys are assumed to conduct monitoring and reporting at the same time as their Assessment Monitoring, thus adding no labor burden or responses. Respondent and response counts are presented in Table 1b to demonstrate how many respondents will partake in the Screening Surveys. All systems conducting Pre-Screen Testing will sample twice during the year of monitoring (2004). This will add further burden and response frequency, since Pre-Screen Testing occurs after Assessment Monitoring is completed for the majority of respondents.

¹ In addition to the national representative sample of 800 small systems, up to about 150 small systems could be selected for Pre-Screen Testing, which may or may not coincide with those in the original sample. EPA assumes only 800 total small systems for cost estimation because it presents a “worst-case” per system cost, with maximum total costs divided across the smallest possible number of systems. This is further explained in Section B.3 of this document.

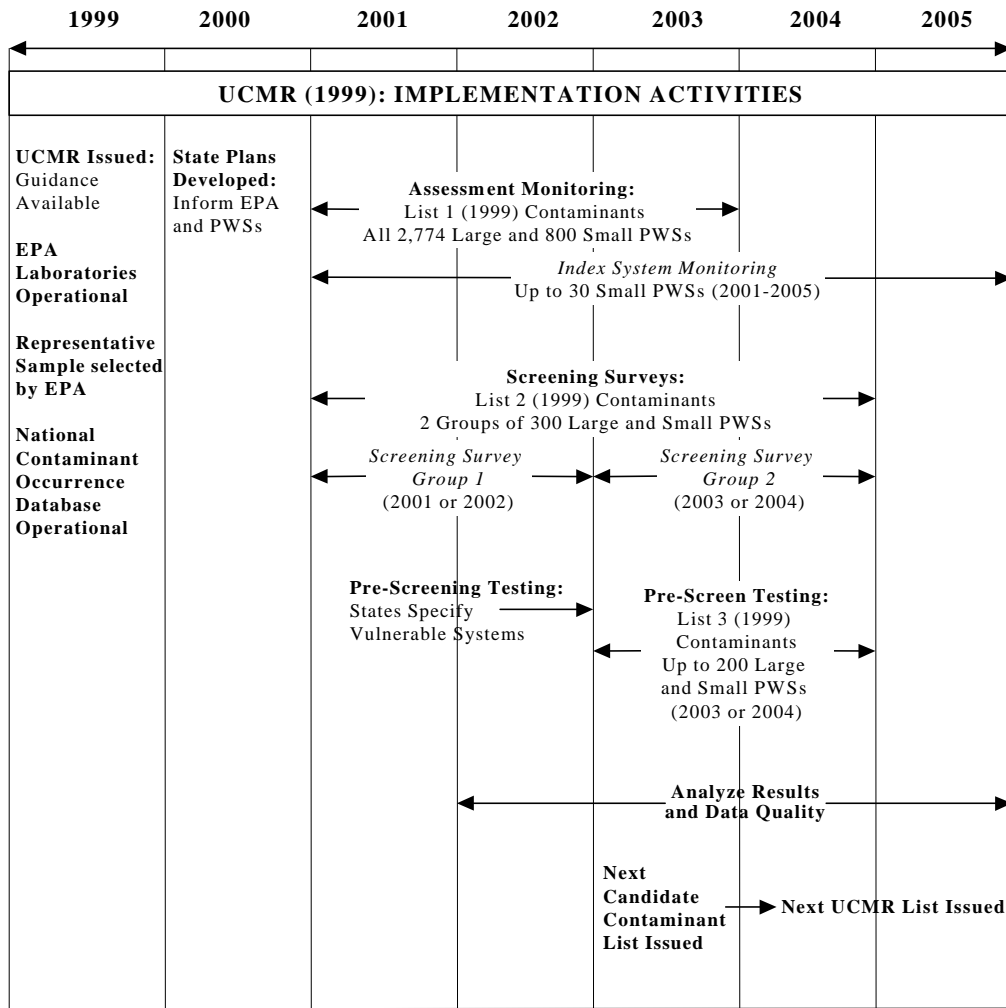


Figure 1
Proposed Implementation Timeline of
UCMR and Related Activities

Tables 1a, 1b, and 1c present summaries of the number of respondents, response frequency, and national burden estimates for the UCMR implementation period of 2001-2005, as well as for the start-up year 2000 (State and EPA costs only). Table 1a presents information for Assessment Monitoring only. Table 1b details the additional burden attributed to the Screening Survey and the Pre-Screen Testing. Table 1c presents total respondent, response, and burden summaries for the full UCMR program (i.e., Assessment Monitoring, Screening Surveys, and Pre-Screen Testing).

Tables 2a and 2b summarize national costs for the Assessment Monitoring component of the UCMR and the full UCMR, respectively. The total labor and non-labor costs are presented for each category of respondent. The total (full UCMR) labor burden to small systems is 4,676 hours, with a cost of \$99,310, and no non-labor costs. The total labor burden to large systems is 28,181 hours, with a labor cost of \$789,050, and non-labor costs for analysis and shipping of \$27.1 million. The total burden to States over the five year implementation period, plus one year of start-up is 54,182 hours, with a labor cost of \$2.2 million. Estimated non-labor costs to States is minimal, with a total of \$140,000 to fund updating of State data systems. The EPA total burden over the same timeframe is 81,450 hours, with labor costs of \$3.3 million, and non-labor costs of \$16.9 million.

Table 1a. Assessment Monitoring Response and Burden Summary¹							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
Number of Respondents²							
Small Systems ³	0	287	287	286	30	30	800
Large Systems	0	925	925	924	0	0	2,774
States ⁴	56	56	56	56	56	56	56
EPA	1	1	1	1	1	1	1
Total with EPA	57	1,268	1,268	1,267	87	87	3,631
Total without EPA	56	1,267	1,267	1,265	86	86	3,630
Frequency of Response⁵							
Small Systems	0.0	2.6	2.6	2.6	2.6	2.6	3.0
Large Systems	0.0	2.9	2.9	2.9	0.0	0.0	2.9
States	4.0	4.0	4.0	4.0	4.0	4.0	24.0
EPA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total with EPA	3.9	2.9	2.9	2.9	3.5	3.5	3.3
Total without EPA	4.0	2.9	2.9	2.9	3.5	3.5	3.3
Total Number of Responses							
Small Systems	0	752	752	752	78	78	2,412
Large Systems	0	2,727	2,727	2,727	0	0	8,180
States	224	224	224	224	224	224	1,344
EPA	1	1	1	1	1	1	6
Total with EPA	225	3,704	3,704	3,704	303	303	11,942
Total without EPA	224	3,703	3,703	3,703	302	302	11,936

Table 1a. Assessment Monitoring Response and Burden Summary¹							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
Total Burden (hours) for All Responses							
Small Systems	0	1,299	1,254	1,254	113	113	4,033
Large Systems	0	9,252	9,252	9,252	0	0	27,756
States	16,953	6,764	8,832	7,043	7,295	7,295	54,182
EPA	15,075	12,375	12,375	16,875	12,375	12,375	81,450
Total with EPA	32,028	29,690	31,713	34,424	19,783	19,783	167,421
Total without EPA	16,953	17,315	19,338	17,549	7,408	7,408	85,971

1. Although EPA is not considered a respondent to the UCMR regulations, Agency burdens are shown here to illustrate the national costs of the program. National totals are shown with and without the inclusion of Agency costs.
2. Number of respondents does not add across because some respondents participate during more than one year (e.g., States and Index systems).
3. Index systems are a subset of the national representative sample of small systems. These 30 systems will conduct Assessment Monitoring during each of the five years of the UCMR implementation period (2001-2005).
4. States will run the overall UCMR program each year. Costs will vary with the amount of system activity. During the year 2000, States will be reviewing and responding to EPA's proposed State plans, as well as completing their primacy applications.
5. Ground water systems must monitor and report at a frequency of two times in the year that they monitor, and surface water systems must monitor four times in the year that they monitor. States are assumed to have a response frequency of four times per year, since they must submit quarterly updates to the SDWIS database. The frequency estimates refer to the frequency of response for only those respondents that have any reporting requirements during a given year.

Table 1b. Screening Surveys and Pre-screen Testing Response and Burden Summary							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
			Screening Survey One ¹	Screening Survey Two	Pre-Screen Testing ²		
Number of Respondents							
Small Systems	0	0	180	180	158	0	0
Large Systems	0	0	120	120	42	0	0
States	n/a	n/a	n/a	n/a	n/a	n/a	n/a
EPA	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total with EPA	0	0	300	300	200	0	0
Total without EPA	0	0	300	300	200	0	0
Frequency of Response							
Small Systems	0.0	0.0	2.5	2.5	2.0	0.0	2.4
Large Systems	0.0	0.0	3.3	3.3	2.0	0.0	3.1
States	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total with EPA	0.0	0.0	2.8	2.8	2.0	0.0	2.6
Total without EPA	0.0	0.0	2.8	2.8	2.0	0.0	2.6
Total Number of Responses							
Small Systems	0	0	452	452	316	0	1,220
Large Systems	0	0	400	400	84	0	884

Table 1b. Screening Surveys and Pre-screen Testing Response and Burden Summary							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
			<i>Screening Survey One¹</i>	<i>Screening Survey Two</i>	<i>Pre-Screen Testing²</i>		
States	0	0	0	0	0	0	0
EPA	0	0	0	0	0	0	0
Total with EPA	0	0	852	852	400	0	2,104
Total without EPA	0	0	852	852	400	0	2,104
Total Burden (hours) for All Responses							
Small Systems	0	0	0	0	643	0	643
Large Systems	0	0	0	0	424	0	424
States	0	0	0	0	0	0	0
EPA	0	0	0	0	0	0	0
Total with EPA	0	0	0	0	1,067	0	1,067
Total without EPA	0	0	0	0	1,067	0	1,067

1. Number of Screening Survey respondents and responses are presented here in Table 1b, but are not additive into the total UCMR program (Table 1c), since Screening Survey responses/respondents will coincide with the Assessment Monitoring responses/respondents. The same respondents will be responding the same number of times, only with more information (e.i., both Assessment Monitoring and Screening Survey contaminant data are submitted).
2. Pre-Screen Testing responses/respondents do not coincide with Assessment Monitoring. However, it is assumed for the cost estimates that the Pre-Screen Testing systems are a subset of the Assessment Monitoring systems. This will not be true during actual implementation. Rather, those systems most vulnerable to the Pre-Screen Testing contaminants will be chosen from each State, regardless of their participation in Assessment Monitoring. By assuming that all are a subset of those systems already monitoring, the most conservative per system cost and burden estimates are achieved. Total costs are divided across the fewest possible number of systems.

DRAFT — April 26, 1999

Table 1c. Total UCMR Response and Burden Summary							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
Number of Respondents¹							
Small Systems	0	287	287	286	188	30	800
Large Systems	0	925	925	924	42	0	2,774
States	56	56	56	56	56	56	56
EPA	1	1	1	1	1	1	1
Total with EPA	57	1,268	1,268	1,266	287	87	3,631
Total without EPA	56	1,267	1,267	1,265	286	86	3,630
Frequency of Response²							
Small Systems	0.0	2.6	2.6	2.6	2.1	2.6	3.4
Large Systems	0.0	2.9	2.9	3.0	2.0	0.0	3.0
States	4.0	4.0	4.0	4.0	4.0	4.0	24.0
EPA	1.0	1.0	1.0	1.0	1.0	1.0	6.0
Total with EPA	3.9	2.9	2.9	2.9	2.4	3.5	3.4
Total without EPA	4.0	2.9	2.9	2.9	2.5	3.5	3.4
Total Number of Responses							
Small Systems	0	752	752	752	394	78	2,728
Large Systems	0	2,727	2,727	2,727	84	0	8,264
States	224	224	224	224	224	224	1,344

Table 1c. Total UCMR Response and Burden Summary							
Respondent Type	2000	2001	2002	2003	2004	2005	TOTAL
EPA	1	1	1	1	1	1	6
Total with EPA	225	3,704	3,704	3,704	703	303	12,342
Total without EPA	224	3,703	3,703	3,703	702	302	12,336
Total Burden (hours) for All Responses							
Small Systems	0	1,299	1,254	1,254	756	113	4,676
Large Systems	0	9,252	9,252	9,252	424	0	28,180
States	16,953	6,764	8,832	7,043	7,295	7,295	54,182
EPA	15,075	12,375	12,375	16,875	12,375	12,375	81,450
Total with EPA	32,028	29,690	31,713	34,424	20,850	19,783	168,488
Total without EPA	16,953	17,315	19,338	17,549	8,475	7,408	87,038

1. Number of respondents does not add across because some respondents participate during more than one year (e.g., States, Index Systems, or systems conducting Pre-Screen Testing).
2. Frequency estimates refer to the frequency of response for only those respondents that have any reporting requirements during a given year.

Table 2a. Assessment Monitoring Cost Summary¹							
Type of Cost	2000	2001	2002	2003	2004	2005	TOTAL
Small Systems							
Labor Cost	\$0	\$27,870	\$26,910	\$26,910	\$2,500	\$2,500	\$86,690
Non-Labor Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Total Small System Cost</i>	<i>\$0</i>	<i>\$27,870</i>	<i>\$26,910</i>	<i>\$26,910</i>	<i>\$2,500</i>	<i>\$2,500</i>	<i>\$86,690</i>
Large Systems							
Labor Cost	\$0	\$259,060	\$259,060	\$259,060	\$0	\$0	\$777,180
Non-Labor Cost	\$0	\$7,747,520	\$7,747,520	\$7,747,520	\$0	\$0	\$23,242,560
<i>Total Large System Cost</i>	<i>\$0</i>	<i>\$8,006,580</i>	<i>\$8,006,580</i>	<i>\$8,006,580</i>	<i>\$0</i>	<i>\$0</i>	<i>\$24,019,740</i>
States							
Labor Cost	\$678,130	\$270,550	\$353,290	\$281,700	\$291,800	\$291,800	\$2,167,270
Non-Labor Cost	\$140,000	\$0	\$0	\$0	\$0	\$0	\$140,000
<i>Total State Cost</i>	<i>\$818,130</i>	<i>\$270,550</i>	<i>\$353,290</i>	<i>\$281,700</i>	<i>\$291,800</i>	<i>\$291,800</i>	<i>\$2,307,270</i>
EPA							
Labor Cost	\$603,000	\$495,000	\$495,000	\$675,000	\$495,000	\$495,000	\$3,258,000
Non-Labor Cost	\$873,460	\$3,048,730	\$2,992,000	\$3,052,000	\$1,340,990	\$1,152,540	\$12,459,720
<i>Total EPA Cost</i>	<i>\$1,476,460</i>	<i>\$3,543,730</i>	<i>\$3,487,000</i>	<i>\$3,727,000</i>	<i>\$1,835,990</i>	<i>\$1,647,540</i>	<i>\$15,717,720</i>

Table 2a. Assessment Monitoring Cost Summary¹							
Type of Cost	2000	2001	2002	2003	2004	2005	TOTAL
National Total							
Assessment Monitoring Total with EPA	\$2,294,590	\$11,848,730	\$11,873,780	\$12,042,190	\$2,130,290	\$1,941,840	\$42,131,420
Assessment Monitoring Total without EPA	\$818,130	\$8,305,000	\$8,386,780	\$8,315,190	\$294,300	\$294,300	\$26,413,700

1. Further detail regarding labor and non-labor costs are found in Sections B-D of this document.

Table 2b. Total UCMR Cost Summary¹							
Type of Cost	2000	2001	2002	2003	2004	2005	TOTAL
Small Systems							
Labor Cost	\$0	\$27,870	\$26,910	\$26,910	\$15,120	\$2,500	\$99,310
Non-Labor Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Total Small System Cost</i>	<i>\$0</i>	<i>\$27,870</i>	<i>\$26,910</i>	<i>\$26,910</i>	<i>\$15,120</i>	<i>\$2,500</i>	<i>\$99,310</i>
Large Systems							
Labor Cost	\$0	\$259,060	\$259,060	\$259,060	\$11,870	\$0	\$789,050
Non-Labor Cost	\$0	\$7,747,520	\$9,168,770	\$9,217,310	\$983,660	\$0	\$27,117,260
<i>Total Large System Cost</i>	<i>\$0</i>	<i>\$8,006,580</i>	<i>\$9,427,830</i>	<i>\$9,476,370</i>	<i>\$995,530</i>	<i>\$0</i>	<i>\$27,906,310</i>
States							
Labor Cost	\$678,130	\$270,550	\$353,290	\$281,700	\$291,800	\$291,800	\$2,167,270
Non-Labor Cost	\$140,000	\$0	\$0	\$0	\$0	\$0	\$140,000
<i>Total State Cost</i>	<i>\$818,130</i>	<i>\$270,550</i>	<i>\$353,290</i>	<i>\$281,700</i>	<i>\$291,800</i>	<i>\$291,800</i>	<i>\$2,307,270</i>
EPA							
Labor Cost	\$603,000	\$495,000	\$495,000	\$675,000	\$495,000	\$495,000	\$3,258,000
Non-Labor Cost	\$873,460	\$3,048,730	\$3,758,030	\$3,843,200	\$4,194,610	\$1,152,540	\$16,870,570
<i>Total EPA Cost</i>	<i>\$1,476,460</i>	<i>\$3,543,730</i>	<i>\$4,253,030</i>	<i>\$4,518,200</i>	<i>\$4,689,610</i>	<i>\$1,647,540</i>	<i>\$20,128,570</i>

Table 2b. Total UCMR Cost Summary¹							
Type of Cost	2000	2001	2002	2003	2004	2005	TOTAL
National Total							
UCMR Total with EPA	\$2,294,590	\$11,848,730	\$14,061,060	\$14,303,180	\$5,992,060	\$1,941,840	\$50,441,460
UCMR Total without EPA	\$818,130	\$8,305,000	\$9,808,030	\$9,784,980	\$1,302,450	\$294,300	\$30,312,890

1. Further detail regarding labor and non-labor costs are found in Sections B-D of this document.

Tables 3a (Assessment Monitoring) and 3b (full UCMR) present per respondent and per response burdens and costs over the entire implementation period. The tables also present average annual burdens and costs. System burden includes time required to read the regulation or State letter, participate in sample collection, report results, and maintain records. The full UCMR average burden for small systems over the 5-year period is estimated to be 5.8 hours per system, or an average annual burden of 1.2 hours per year, with an associated average annual cost of \$25. The average burden for large systems is estimated to be 10.2 hours, or approximately 2.0 hours per year, with an average annual labor cost of \$57. Average annual non-labor cost per large system is estimated to be \$1,955.

The average total burden hours (2000-2005) for a State or other primacy agent for the Public Water System Supervision Program is estimated to be 968 hours over the implementation period, or 194 hours per year (i.e., approximately 1/10 of an FTE).² This burden includes time to read the regulation, inform systems of their requirements under the regulation, review and respond to EPA's monitoring plan, provide training for laboratories, review monitoring results, maintain records, report results to EPA's Safe Drinking Water Information System (SDWIS), and issue enforcement actions. Many of these activities are conducted in coincidence with current drinking water program requirements. EPA's cost and burden were discussed above.

² Burdens and costs for the States and EPA were considered over the period 2000-2005 (i.e., the UCMR period, plus one start-up year). The 6-year total, however, was averaged over 5 years, to represent the average annual cost over the implementation period.

Table 3a. Assessment Monitoring Burden and Cost Summary						
Burden (hours) / Cost (dollars)	Small Systems	Large Systems	States¹	EPA¹	National Average with EPA²	National Average without EPA
ASSESSMENT MONITORING ONLY — 5-Year Average Costs						
Ave. # of Responses Per Respondent	3.0	2.9	24.0	6.0	3.3	3.3
Labor Cost Per Respondent	\$108	\$280	\$38,701	\$3,258,000	\$1,732	\$835
Non-Labor Cost Per Respondent	\$0	\$8,379	\$2,500	\$12,459,720	\$9,871	\$6,441
<i>Total Cost (Labor plus Non-Labor)</i>	<i>\$108</i>	<i>\$8,659</i>	<i>\$41,201</i>	<i>\$15,717,720</i>	<i>\$11,603</i>	<i>\$7,277</i>
Total Cost Per Response	\$36	\$2,936	\$1,717	\$2,619,620	\$3,528	\$2,213
Total Burden Per Respondent	5.0	10.0	967.5	81,450.0	46.1	23.7
Total Burden Per Response	1.7	3.4	40.3	13,575.0	14.0	7.2
ASSESSMENT MONITORING ONLY — Average Annual Costs						
Ave. # of Responses Per Respondent	0.6	0.6	4.8	1.2	0.7	0.7
Labor Cost Per Respondent	\$22	\$56	\$7,740	\$651,600	\$346	\$167
Non-Labor Cost Per Respondent	\$0	\$1,676	\$500	\$2,491,944	\$1,974	\$1,288
<i>Total Cost (Labor plus Non-Labor)</i>	<i>\$22</i>	<i>\$1,732</i>	<i>\$8,240</i>	<i>\$3,143,544</i>	<i>\$2,321</i>	<i>\$1,455</i>
Total Cost Per Response	\$7	\$587	\$343	\$523,924	\$706	\$443
Total Burden Per Respondent	1.0	2.0	193.5	16,290.0	9.2	4.7
Total Burden Per Response	0.3	0.7	8.1	2,715.0	2.8	1.4

1. Burdens and costs for the States and EPA were considered over the period 2000-2005 (i.e., the UCMR period, plus one start-up year). The 6-year total, however, was averaged over 5 years, in order to represent the average annual cost over the implementation period.
2. National average burdens and costs vary greatly between the State respondents and the system respondents. This should be taken into consideration when looking at the national average with or without EPA.

Table 3b. UCMR Burden and Cost Summary						
Burden (hours) / Cost (dollars)	Small Systems	Large Systems	States¹	EPA¹	National Average with EPA²	National Average without EPA
TOTAL UCMR PROGRAM — 5-Year Average Costs						
Ave. # of Responses Per Respondent	3.4	3.0	24.0	6.0	3.4	3.4
Labor Cost Per Respondent	\$124	\$284	\$38,701	\$3,258,000	\$1,739	\$842
Non-Labor Cost Per Respondent	\$0	\$9,776	\$2,500	\$16,870,570	\$12,153	\$7,509
<i>Total Cost (Labor plus Non-Labor)</i>	<i>\$124</i>	<i>\$10,060</i>	<i>\$41,201</i>	<i>\$20,128,570</i>	<i>\$13,892</i>	<i>\$8,351</i>
Total Cost Per Response	\$36	\$3,377	\$1,717	\$3,354,762	\$4,087	\$2,457
Total Burden Per Respondent	5.8	10.2	967.5	81,450.0	46.4	24.0
Total Burden Per Response	1.7	3.4	40.3	13,575.0	13.7	7.1
TOTAL UCMR PROGRAM — Average Annual Costs						
Ave. # of Responses Per Respondent	0.7	0.6	4.8	1.2	0.7	0.7
Labor Cost Per Respondent	\$25	\$57	\$7,740	\$651,600	\$348	\$168
Non-Labor Cost Per Respondent	\$0	\$1,955	\$500	\$3,374,114	\$2,431	\$1,502
<i>Total Cost (Labor plus Non-Labor)</i>	<i>\$25</i>	<i>\$2,012</i>	<i>\$8,240</i>	<i>\$4,025,714</i>	<i>\$2,778</i>	<i>\$1,670</i>
Total Cost Per Response	\$7	\$675	\$343	\$670,952	\$817	\$491
Total Burden Per Respondent	1.2	2.0	193.5	16,290.0	9.3	4.8
Total Burden Per Response	0.3	0.7	8.1	2,715.0	2.7	1.4

1. Burdens and costs for the States and EPA were considered over the period 2000-2005 (i.e., the UCMR period, plus one start-up year). The 6-year total, however, was averaged over 5 years, in order to represent the average annual cost over the implementation period.
2. National average burdens and costs vary greatly between the State respondents and the system respondents. This should be taken into consideration when looking at the national average with or without EPA.

B. Public Water Systems

1. Inventory Specifications

- Inventory figures are obtained from SDWIS, January 17, 1997. These inventory figures have been used because this particular database query was edited to improve accuracy (e.g., eliminating PWSs that were no longer in service, rectifying water source categories, and other possible discrepancies between SDWIS and actual inventory information). This edited inventory was used for the recent Revision of Variance and Exemption Regulations (63 FR 43833-43851 (August 14, 1998)), as well as other recent drinking water program cost analyses.
- Number of entry points are derived from the 1993 Association of State Drinking Water Administrators (ASDWA) Survey on Public Water System Monitoring Costs and State Laboratory Capacity.
- Regulated systems are limited to non-purchased CWSs and non-purchased NTNCWSs (i.e., those systems that are regulated under the UCMR). Transient Non-Community Water Systems and other systems that primarily use purchased water are excluded from the UCMR requirements (and the inventory used here).
- National inventory figures categorized by size and source, including corresponding average entry points, are shown in Table 4 below.

Table 4: National System Inventory and Average Number of Entry Points and Water Sources							
Size Category	# of Systems	Average # of Entry Points	Average # of Water Sources	# of Systems	Average # of Entry Points	Average # of Water Sources	Total # of Systems
	Ground Water			Surface Water			TOTAL
500 and under	46,200	1.3	1.3	1,900	1.5	1.5	48,100
501 to 3,300	12,306	2.1	2.1	1,820	1.9	1.9	14,126
3,301 to 10,000	2,404	3.8	3.8	1,006	1.7	1.7	3,410
10,001 to 50,000	1,254	7.5	4.0	927	1.9	1.9	2,181
over 50,000	204	22.7	4.0	389	3.7	3.7	593
TOTAL	62,368			6,042			68,410

- All systems serving greater than 10,000 people (large systems) will be required to conduct Assessment Monitoring under the UCMR. Only a national representative sample of 800 systems serving 10,000 or fewer people (small systems) will be required to conduct Assessment

Monitoring. The total numbers of systems that will conduct Assessment Monitoring are listed below in Table 5.

Table 5. Number of Index and Non-Index Systems to Conduct Assessment Monitoring, by Source Water and System Size¹					
Size Category	Ground Water Systems		Surface Water Systems		Total - All Systems
	<i>Non-Index Systems</i>	<i>Index Systems</i>	<i>Non-Index Systems</i>	<i>Index Systems</i>	
500 and under	96	3	11	0	110
501 to 3,300	231	9	81	3	324
3,301 to 10,000	202	9	149	6	366
<i>Subtotal #10,000</i>	<i>529</i>	<i>21</i>	<i>241</i>	<i>9</i>	<i>800</i>
10,001 to 50,000	1,254	n/a	927	n/a	2,181
50,001 and over	204	n/a	389	n/a	593
<i>Subtotal >10,000</i>	<i>1,458</i>	<i>n/a</i>	<i>1,316</i>	<i>n/a</i>	<i>2,774</i>
TOTAL	1,987	21	1,557	9	3,574

1. Index systems will sample during each of the 5 years, 2001-2005 for the List 1 (1999) Contaminants. Each Non-Index and large system will sample for the List 1 (1999) Contaminants during one of three years (2001-2003), with one-third of the total number of systems assumed to sample during each of these three years.
- Approximately 600 of the Assessment Monitoring systems (2 sets of 300 each) will be selected to conduct Screening Surveys. Another set of up to 200 systems will be chosen from all small and large systems to participate in Pre-Screen Testing. The numbers of systems participating, categorized by ownership type, source water, and system size, are presented below in Table 6.

Table 6. Number of Systems to Participate in Screening Survey and Pre-Screen Testing, by Source Water and System Size¹				
Size Category	Ground Water Systems		Surface Water Systems	
	<i>Screening Surveys (2002 and 2003)²</i>	<i>Pre-Screen Testing (2004)³</i>	<i>Screening Surveys (2002 and 2003)</i>	<i>Pre-Screen Testing (2004)</i>
500 and under	54	25	6	33
501 to 3,300	45	25	15	34
3,301 to 10,000	35	25	25	16

Table 6. Number of Systems to Participate in Screening Survey and Pre-Screen Testing, by Source Water and System Size¹				
Size Category	Ground Water Systems		Surface Water Systems	
	<i>Screening Surveys (2002 and 2003)²</i>	<i>Pre-Screen Testing (2004)³</i>	<i>Screening Surveys (2002 and 2003)</i>	<i>Pre-Screen Testing (2004)</i>
Subtotal ≤10,000	134	75	46	83
10,001 to 50,000	27	20	33	12
50,001 and over	13	5	47	5
Subtotal >10,000	40	25	80	17
TOTAL	174	100	126	100

1. Numbers of systems presented here are used for cost estimation purposes only. Actual distribution of systems will be determined through statistical sampling. For simplification, it was assumed that no Index systems will be selected to participate in Screening Surveys or Pre-Screen Testing.
 2. There will be two Screening Survey years (2002 and 2003). During each Screening Survey year a representative sub-sample of 300 Assessment Monitoring systems will be chosen to monitor.
 3. Pre-Screen Testing will occur during only one year (2004). These systems will be identified by each State as the most vulnerable to the List 3 (1999) Contaminants.
- In implementing the Regulatory Flexibility Act (RFA), EPA suggests that economic impacts be analyzed separately for privately-owned versus publicly-owned systems, related to the different economic characteristics of these ownership types. EPA assumes that the distribution of the national representative sample of small systems will reflect the proportions of publicly- and privately-owned systems in the national inventory. The estimated distribution of the representative sample of small systems, categorized by ownership type, source water, and system size, is presented below in Table 7.

Table 7. Number of Publicly- and Privately-Owned Small Systems to Participate in Assessment Monitoring					
Size Category	Publicly-Owned Systems		Privately-Owned Systems		Total - All Systems
	Non-Index Systems	Index Systems	Non-Index Systems	Index Systems	
GROUND WATER SYSTEMS					
500 and under	20	1	76	2	99
501 to 3,300	159	6	72	3	240
3,301 to 10,000	158	7	44	2	211

Table 7. Number of Publicly- and Privately-Owned Small Systems to Participate in Assessment Monitoring					
Size Category	Publicly-Owned Systems		Privately-Owned Systems		Total - All Systems
	<i>Non-Index Systems</i>	<i>Index Systems</i>	<i>Non-Index Systems</i>	<i>Index Systems</i>	
<i>Subtotal Ground Water Systems</i>	337	14	192	7	550
SURFACE WATER SYSTEMS					
500 and under	3	0	8	0	11
501 to 3,300	56	2	25	1	84
3,301 to 10,000	116	5	33	1	155
<i>Subtotal Surface Water Systems</i>	175	7	66	2	250
TOTAL	512	21	258	9	800

- To fulfill RFA requirements, EPA has also estimated economic impacts to small systems under a “worst case” limited funding scenario. Under this worst case, EPA would be limited to the existing \$4 million that is currently set-aside for small system testing. It is estimated that EPA could fund an Assessment Monitoring testing program for approximately 396 small systems under these limited funding conditions. The estimated distribution of the small systems in the limited funding scenario is presented below in Table 8.

Table 8. Number of Publicly- and Privately-Owned Systems to Participate in Assessment Monitoring, for Limited Funding Program ¹					
Size Category	Publicly-Owned Systems		Privately-Owned Systems		Total - All Systems
	Non-Index Systems	Index Systems	Non-Index Systems	Index Systems	
GROUND WATER SYSTEMS					
500 and under	11	0	38	1	50
501 to 3,300	80	2	36	1	119
3,301 to 10,000	79	2	22	1	104
Subtotal Ground Water Systems	170	4	96	3	273

Table 8. Number of Publicly- and Privately-Owned Systems to Participate in Assessment Monitoring, for Limited Funding Program ¹					
Size Category	Publicly-Owned Systems		Privately-Owned Systems		Total - All Systems
	Non-Index Systems	Index Systems	Non-Index Systems	Index Systems	
SURFACE WATER SYSTEMS					
500 and under	1	0	4	0	5
501 to 3,300	28	1	13	0	42
3,301 to 10,000	58	2	16	0	76
Subtotal Surface Water Systems	87	3	33	0	123
TOTAL	257	7	129	3	396

1. The Limited Funding Program assumes that the only funds available to run the program are those that are currently in hand — \$4 million of set aside funds from Federal Fiscal Years 1998 and 1999. This is a “worst case” funding scenario.

2. Labor Rates and System Income Assumptions

- An average hourly labor rate of \$14.50 is assumed for systems serving 3,300 or fewer people. An average hourly labor rate of \$28 is assumed for systems serving more than 3,300 people. These rates are taken from the Small Water Systems Byproducts Treatment and Disposal Cost Document, April 1993, and are the most currently available labor rates which directly correspond to the drinking water industry. Hourly system labor rates used for this analysis assume that system UCMR activities are primarily not conducted by engineering staff.
- As specified in EPA guidance for implementation of the RFA, different tests are used to analyze small entity impacts on privately-owned versus publicly-owned entities. For publicly-owned systems, EPA guidance suggests that a “revenue test” be used, which compares annual system costs attributed to the rule to the system’s annual revenues. Privately-owned systems are typically submitted to a “sales test”, which involves the analogous comparison of UCMR-related costs to a privately-owned system’s sales. The median revenues and sales used for these comparisons are listed below in Table 9, and are obtained from the 1995 Community Water System Survey.

Table 9. Median System Revenues and Sales for Publicly- and Privately-Owned Systems		
Size Category	Median Revenue for Publicly-Owned Systems	Median Sales for Privately-Owned Systems
Ground Water		
500 and under	\$16,458	\$15,696
501 to 3,300	\$106,706	\$111,988
3,301 to 10,000	\$479,865	\$623,116
10,001 to 50,000	\$1,643,510	\$1,649,001
50,001 and over	\$6,868,318	\$10,338,454
Surface Water		
500 and under	\$28,037	\$22,704
501 to 3,300	\$183,408	\$151,263
3,301 to 10,000	\$708,815	\$572,535
10,001 to 50,000	\$2,252,368	\$2,719,214
50,001 and over	\$12,320,419	\$12,611,378

3. Assumptions for System Implementation Burden and Labor Cost

Those systems subject to the UCMR include all large non-purchased CWSs and NTNCWSs, as well as small systems that are chosen as part of the population-weighted representative sample of systems serving 10,000 or fewer people. Table 5 and 6, above, list the number of systems assumed to be participating in Assessment Monitoring, Screening Surveys, and Pre-Screen Testing for each size and source category.

System implementation requirements are categorized into four major activities, as follows:

- Reading regulations and/or requirement letter from States
- Monitoring activities
- Reporting and Record keeping
- Public Notification

Table 10 illustrates the years in which these required system activities are assumed to occur.

Table 10. Schedule Assumptions for Estimating the Cost of System Activities¹						
Activity	2000	2001	2002	2003	2004	2005
Reading regulations/ State letter	No system activities; monitoring begins in 2001	1/3 of Non-Index systems, plus all Index systems	1/3 of Non- Index systems	1/3 of Non- Index systems	none	none
Monitoring activities ² conducted by systems serving ≤10,000, except Index systems		Ground water: AM ³ chemicals at 2x/yr for 1/3 of systems; Surface water: AM chemicals at 4x/yr for 1/3 of systems; All: Aeromonas 2x/yr at 2 distribution points for 1/3 of systems	same as in 2001, plus SS1 ⁴ for subset of systems, at same frequencies as AM	same as in 2002, but new subset of systems to conduct SS2 ⁴	PST ⁵ for approx. 150 small systems, at 2x/yr for both ground and surface water systems	none
Monitoring activities conducted for Index systems (serving ≤10,000) ⁶		Ground water: AM at 2x/yr for all Index systems; Surface water: AM at 4x/yr for all Index systems; All: Aeromonas 2x/yr at 2 distribution points for all systems	same as in 2001	same as in 2001	same as in 2001	same as in 2001
Monitoring conducted by all systems serving > 10,000		Ground water: AM at 2x/yr for 1/3 of systems; Surface water: AM at 4x/yr for 1/3 of systems; All: Aeromonas 2x/yr at 2 distribution points for 1/3 of systems	same as in 2001, plus SS1 for subset of systems, at same frequencies as AM chemicals	same as in 2002, but new subset of systems to conduct SS2	PST for approx. 50 systems, at frequency of 2x/yr for both ground and surface water systems	none
Reporting/ Record keeping		Same as the monitoring schedule. Monitoring data reported to States must be in electronic format.				
Public Notification		Part of the annual Consumer Confidence Report and/or other public notice requirements, thus no burden here				

1. The schedule in this table is an approximation of the expected UCMR schedule that has been established for cost estimation purposes. Actual monitoring dates may vary, but will not impact overall cost estimations. See Tables 1a, 1b, and 1c for numbers of systems participating in each component of the UCMR.
2. Monitoring activities include: receipt of sample kit, reading monitoring instructions, and collecting and shipping samples.
3. “AM” refers to Assessment Monitoring, the primary monitoring component of the UCMR monitoring cycle, to be conducted by 3,574 systems for the List 1 (1999) Contaminants.

4. SS1 and SS2 refer to the 2 rounds of Screening Surveys, to be conducted during 2002 (SS1) and 2003 (SS2) by two separate groups of 300 systems (subsets of those conducting Assessment Monitoring). It is assumed that where possible, monitoring will be conducted coincident with Assessment Monitoring.
5. PST refers to Pre-Screen Testing, the third component of UCMR, conducted by up to 200 systems in 2004 that are identified as the most vulnerable to the List 3 (1999) Contaminants.
6. Index Systems are a subset of the national representative sample of small systems. They will conduct Assessment Monitoring during each of the five years of the UCMR implementation period (2001-2005).

a. Reading the Regulations/State Letter

Systems are assumed to read the UCMR regulations and/or a State issued guidance letter at the beginning of their required monitoring year (i.e., one-third of the systems in each of the three Assessment Monitoring years). Small systems can rely on the State for information pertaining to the regulation, rather than reading the regulation. These systems are expected to spend one hour, on average, reading a letter from the State that outlines the requirements of the UCMR. The 2,774 large systems are assumed to read both the regulation and information from the State, requiring on average 1/2 day (4 hours). National costs are estimated by multiplying the average burden hours by the average system labor rate, times the number of systems effected.

b. Monitoring Activities

For the primary component of UCMR implementation — Assessment Monitoring — the chemical contaminants will be sampled at each entry point to the distribution system. All systems will sample for the one Assessment Monitoring microbiological contaminant, *Aeromonas hydrophila*, at two points in the distribution system at a frequency of two times during the monitoring year. The number of chemical samples required varies by primary water source. Ground water systems are required to monitor at a rate of two times per year. Surface water systems are required to monitor four times per year.

For Assessment Monitoring, it is assumed that one-third of all small Non-Index and large systems will conduct monitoring activities in each year from 2001 through 2003, with an estimated burden of 0.5 hours per entry point to collect chemical samples for analysis. This monitoring burden includes: receipt of monitoring kit, reading laboratory instructions, and collection and shipping of samples. These same systems are assumed to collect samples for *Aeromonas hydrophila* analysis along with their monitoring required under the Total Coliform Rule, thus no additional labor burden is allotted. Index systems will assist an EPA-appointed sample collector to collect Assessment Monitoring samples during each year from 2001 to 2005. Because Index system cannot choose the timing of their monitoring activities, they are assumed to require an average of 0.25 hours to assist the sample collector at each monitoring point.

All small systems in the national representative sample (both Index and Non-Index) will also be required to collect a sample for standard water quality parameters (e.g., basic ions, nitrate) at each sampling station (i.e., all entry and distribution system sampling points). EPA will also pay for this testing. No additional labor burden is allotted to systems, since they will already be collecting samples at each sampling station.

For the Screening Surveys, systems will be chosen from systems conducting the Assessment Monitoring. Separate subsets of 300 systems will be chosen for each of the two Screening Surveys, one to be conducted in 2002 and the other in 2003 (see Table 6). Monitoring frequencies and burdens are assumed to be the same as those described for the chemical contaminants in the Assessment Monitoring program.

A targeted sample of up to 200 of the nations most vulnerable systems will participate in Pre-Screen Testing. For small systems, system staff will assist an EPA contractor with the monitoring for the microbiological contaminants listed in Table 12c. Both ground and surface water systems conducting Pre-Screen Testing will sample twice during 2004, at locations related to system water sources (a maximum of 4 sampling stations is assumed). Because of the complexity associated with the microbial contaminant monitoring and analysis, EPA contractors will conduct the monitoring and EPA-designated laboratories will conduct the analyses. Small systems are assumed to spend one hour at each sampling station to assist in the monitoring effort. EPA will bear the analytical and shipping costs for small systems. Large systems that are chosen to participate in Pre-Screen Testing will be required to conduct their own sampling, to use EPA-designated laboratories for sample analysis, and to pay for the analysis of samples. Frequency and maximum number of sampling stations are the same as specified for small systems, with 1.5 hours of burden assumed for each sampling station.

For Assessment Monitoring, it is assumed that where possible, systems (except for Index systems) will coordinate their sampling with the Phase II/V Standard Monitoring Framework (40 CFR Part 141) for sampling of chemical contaminants. Based on the 1998 draft of *"Information Collection Request for Chemical Monitoring Reform"* (CMR ICR) (OMB # 2040-0090, EPA # 0270-37), systems are assumed to be monitoring under the Phase II/V Rule at a rate ranging from one to four times in a given year of a three-year monitoring cycle. Table 11 illustrates the percentages of systems that are assumed to be currently monitoring at the various rates under Phase II/V framework. No burden is allotted if the monitoring event coincides with Phase II/V monitoring. For entry point monitoring, at least one of each system's required monitoring events is assumed to cause no additional labor burden, since all systems must monitor annually for nitrate (94.2 percent of ground water systems and 94.7 percent of surface water surface). Systems on quarterly monitoring (5.6 percent of ground water systems and 4.3 percent of surface water systems) for either Phase II/V Volatile Organics Compounds (VOCs) or Synthetic Organic Compounds (SOCs) are assumed to incur no additional labor burden for collecting samples associated with the UCMR program. Ground water systems are assumed to have zero burden where Phase II/V monitoring is twice or more per year (0.2 percent). Surface water systems which are monitoring twice per year under Phase II/V (1 percent) were assumed to incur a burden for two of their four required UCMR monitoring events.

Table 11. Monitoring Frequency under Phase II/V		
Minimum Monitoring Frequency	Source	
	Ground Water	Surface Water
Once per Year ¹	94.2%	94.7%

Table 11. Monitoring Frequency under Phase II/V		
Minimum Monitoring Frequency	Source	
	Ground Water	Surface Water
Twice per Year	0.2%	1.0%
Four times per Year	5.6%	4.3%

1. All systems are required to collect nitrate at entry points to the distribution system once a year, under 40 CFR 141.23.

All Screening Survey monitoring events are assumed to coincide with Assessment Monitoring, since the Screening Survey systems are a subset of those conducting Assessment Monitoring. No coincident monitoring is assumed for the Pre-Screen Testing, since it occurs after Assessment Monitoring is completed, and since samples may be collected at different locations.

Although Pre-Screen Testing systems will be chosen by States from all small and large systems, for the cost analysis EPA assumes that all Pre-Screen Testing is conducted by systems that were part of the Assessment Monitoring program. First, States will nominate systems most vulnerable to the List 3 (1999) Contaminants as candidates for Pre-Screen Testing, in addition to the national representative sample of 800 small systems. EPA will then statistically select up to 200 Pre-Screen Testing systems from the large and small systems (CWS and NTNCWS) listed. The small systems selected may or may not coincide with those in the national representative sample. It is possible that up to approximately 150 additional small systems could be selected for Pre-Screen Testing. The number of additional small systems is unknown because EPA cannot pre-determine how many of the 800 systems in the national representative sample would be in the States most vulnerable designation. EPA assumes only 800 total small systems for cost estimation because it presents a “worst-case” per system cost, with maximum total costs divided across the smallest possible number of systems.

c. Reporting and Record Keeping

Systems are assumed to require on average 0.5 hours per monitoring period to report analytical results to the State and to maintain their own records of the results. The burden associated with the one-time reporting of additional required data elements under UCMR is estimated to be 0.5 hours per system for all systems. This one-time burden is allotted with each system’s first reporting period.

EPA considers this burden assumption to be conservative, since much of the UCMR activities will coincide with Phase II/V and other contaminant reporting and recordkeeping. In addition, for small systems, electronic reporting to States will be provided by the EPA-designated laboratories.

d. Public Notification

Systems are required to notify their users of the detection of any unregulated chemicals. Specifically, the results of UCMR monitoring will be reported through the Consumer Confidence Reports (63 FR 44512 (August 19, 1998)) and the revised Public Notification Rule (due late 1999). Failure to monitor for unregulated contaminants required through the UCMR would be reportable under the public notification rule. Therefore, no additional public notification burden is assumed under the UCMR.

4. Assumptions for Non-labor Costs to Public Water Systems

Under the UCMR, no small system will incur non-labor costs. By design of the rule, the EPA assumes all laboratory and shipping costs for the systems in the national representative sample of small systems. For large systems, the most significant cost associated with the implementation of the UCMR is the cost of laboratory services for contaminant analysis. The estimated laboratory analytical cost associated with each component of UCMR are shown below in Tables 12a, 12b, and 12c.

UCMR analytical costs are a function of the total number of samples and the cost for all methods. The national cost of sample analysis is estimated by the following:

Assessment Monitoring and Screening Survey Laboratory Analytical Cost	=	(# of systems) * (# of sampling stations) * (monitoring frequency) * (analytical cost)
<i>Aeromonas</i> Analytical Cost	=	(# of systems) * (two points in distribution system) * (monitoring frequency) * (analytical cost)
Pre-Screen Testing Analytical Cost	=	(# of systems) * (# of sampling stations (maximum 4)) * (monitoring frequency) * (analytical cost)

Note that instead of paying the full analytical cost for Assessment Monitoring, large systems may pay only the smaller “incremental” analytical costs (listed below in Table 12a) when UCMR monitoring coincides with ongoing Phase II/V compliance monitoring. In some cases, UCMR monitoring can utilize the same laboratory analytical methods that are required for ongoing compliance monitoring. Therefore, when UCMR monitoring and Phase II/V monitoring are conducted concurrently, only incremental fees are charged for analysis of the additional UCMR compounds. With methods that are not currently in use, no cost savings can be realized.

Table 12a. UCMR Assessment Monitoring / List 1 (1999) Contaminants: analytical methods and estimated costs per analysis ¹				
Contaminant Name (Group)	CASRN	Assumed EPA Analytical Method	Cost	Incremental Cost ²
Chemical Contaminants				
2,4-dinitrotoluene (SOC)	121-14-2	525.2	\$160 est.	\$20 est.
2,6-dinitrotoluene (SOC)	606-20-2	525.2		
MTBE (methyl-tert-butyl-ether) (VOC)	1634-04-4	524.2	\$150 est.	\$20 est.
Nitrobenzene (VOC)	98-95-3	524.2		
DDE (SOC)	72-55-9	508, 508.1, 525.5	\$150 (est. for 508)	\$0 (est. for 508)
EPTC (s-ethyl-dipropylthiocarbamate) (SOC)	759-94-4	507, 525.2	\$160 (est. for 507)	\$40 (est. for 507)
Molinate (SOC)	2212-67-1	507, 525.2		
Terbacil (SOC)	5902-51-2	507, 525.2		
DCPA mono-acid degradate (SOC)	887-54-7	515.1, 515.2	\$160 (est. for 515.1)	\$20 (est. for 515.1)
DCPA di-acid degradate (SOC)	2136-79-0	515.1, 515.2		
Microbial Contaminants				
Aeromonas hydrophila	n/a	In review	\$25	n/a

1. Estimates of laboratory analytical costs were derived from review of recent laboratory price schedules that were compiled for cost estimations under various drinking water program regulations. In addition, five national drinking water laboratories and other UCMR stakeholders were consulted for the unique UCMR contaminants.
2. Instead of paying full analytical cost for Assessment Monitoring, large systems may pay only the smaller “incremental” analytical costs when UCMR monitoring coincides with ongoing compliance monitoring. With methods that are not currently in use, no cost savings can be realized.

Table 12b. UCMR Screening Survey / List 2 (1999) Contaminants: analytical methods and estimated costs per analysis			
<i>Contaminant Name (Group)</i>	<i>CASRN</i>	<i>Assumed EPA Analytical Method</i>	<i>Cost</i>
SCREENING SURVEY YEAR 1 (2002)			
Chemical Contaminants			
Prometon (SOC)	1610-18-0	507, 525.2, In development	\$320 (est. for 507)

Table 12b. UCMR Screening Survey / List 2 (1999) Contaminants: analytical methods and estimated costs per analysis			
<i>Contaminant Name (Group)</i>	<i>CASRN</i>	<i>Assumed EPA Analytical Method</i>	<i>Cost</i>
Acetochlor (SOC)	34256-82-1	507, 525.2, In development	
Linuron (SOC)	330-55-2	NPS-4, 553, In development	\$180 est.
Diuron (SOC)	330-54-1	NPS-4, 553, In development	
Alachlor ESA (SOC)	n/a	To be determined	\$200 est.
SCREENING SURVEY YEAR 2 (2003)			
Chemical Contaminants			
2,4,6-trichlorophenol (VOC)	32295	552, In development	\$160 est.
2,4-dichlorophenol (VOC)	120-83-2	552, In development	
2,4-dinitrophenol (VOC)	51-28-5	In development	\$290 est.
2-methyl-phenol (VOC)	95-48-7	In development	
1,2-diphenylhydrazine (VOC)	122-66-7	In development	
Diazinon (SOC)	333-41-5	In development	Will require special handling (507, 525.2 modifications) \$275 est.
Disulfoton (SOC)	108937	In development	
Fonofos (SOC)	944-22-9	In development	
Terbufos (SOC)	13071-79-9	In development	

Table 12c. UCMR Pre-Screen Testing / List 3 (1999) Contaminants: analytical methods and estimated costs per analysis			
<i>Contaminant Name</i>	<i>CASRN</i>	<i>Assumed Analytical Method</i>	<i>Cost</i>
Microbial Contaminants			
Cyanobacteria/toxins	n/a	in review	\$420 est.
Echoviruses	n/a	in review	\$1,500 est.
Coxsackieviruses	n/a	in review	\$1,500 est.

In addition to analytical costs, large systems will incur costs for the shipment of the sample bottles to the laboratory. Systems are assumed to ship a parcel of sample bottles to laboratories for each entry point during each monitoring period. Costs are adjusted down for coincident monitoring, allowing partial cost of shipping to be allotted to the UCMR samples.

For the Assessment Monitoring component of UCMR, calculations assume that cost efficiencies will be realized by analyzing UCMR contaminants from the same sample using the same methods that are currently used to test Phase II/V VOCs and SOCs, whenever possible. The Agency assumes that where unregulated monitoring events coincide with Phase II/V monitoring for a specific contaminant group, the laboratory would include the additional unregulated contaminants in the multi-residue VOC or SOC analysis at a minimal additional charge (refer to “Incremental Cost” column in Table 12a). EPA uses the Phase II/V monitoring frequencies developed for the CMR ICR to estimate the number of times that UCMR monitoring can coincide with the required current monitoring (i.e., where cost efficiencies can be assumed).

Table 13. Multipliers for Coincidence Between UCMR and Phase II/V Analytical Methods								
Monitoring Category	VOCs with Current Methods				SOCs with Current Methods			
	<i>% Systems</i>	<i>Average Frequency per Year¹</i>	<i># Sample Periods Coincident with UCMR per Year²</i>	<i># Sample Periods Not Coincident with UCMR per Year</i>	<i>% Systems</i>	<i>Average Frequency per Year¹</i>	<i># Sample Periods Coincident with UCMR per Year²</i>	<i># Sample Periods Not Coincident with UCMR per Year</i>
Ground Water Systems								
Waivers ³	18.00%	0.08	0.00	2.00	21.00%	0.00	0.00	2.00
Standard Monitoring (serving >3,300) ⁴	65.73%	0.32	1.00	1.00	78.53%	0.67	1.00	1.00
Monitoring Detections, but R&C < MCL ⁵	10.51%	1.20	1.00	1.00	0.38%	1.20	2.00	0.00
Monitoring Detections, but NOT R&C < MCL	5.60%	4.00	2.00	0.00	0.07%	5.00	2.00	0.00
MCL Violation	0.16%	2.40	2.00	0.00	0.03%	3.40	2.00	0.00
Surface Water Systems								
Waivers ³	25.00%	0.00	0.00	4.00	21.00%	0.00	0.00	4.00
Standard Monitoring (serving >3,300) ⁴	65.60%	1.00	1.00	3.00	57.60%	0.67	1.00	3.00
Monitoring Detections, but R&C < MCL ⁵	5.54%	1.60	2.00	2.00	16.09%	1.60	2.00	2.00
Monitoring Detections, but NOT R&C < MCL	3.76%	4.00	4.00	0.00	4.33%	5.00	4.00	0.00
MCL Violation	0.10%	2.40	4.00	0.00	0.98%	3.40	4.00	0.00

1. Average frequencies calculated using the same assumptions as the CMR ICR.
2. In determining the number of coincident and non-coincident monitoring periods, the most likely annual schedule under Phase II/V monitoring was used.
3. Waivered systems will incur full cost for analysis, but have excluded labor costs for one UCMR sample set during the three year period, assuming UCMR monitoring is coincident with current monitoring of nitrates.
4. Systems serving greater than 3,300 people that are on Standard Monitoring must sample in two consecutive quarters, with at least one monitoring event conducted during the three year compliance period (2001-2003). Systems serving 25-3,300 people must sample once during the three year compliance period.
5. R&C < MCL abbreviates “reliably and consistently below the maximum contaminant level”.

Cost efficiencies for analytical laboratory fees are estimated somewhat differently than are the labor efficiencies in the case of coincident monitoring events. The CMR ICR estimated the proportion of systems that are currently on the following monitoring regimes for SOCs and VOCs: waivers; standard monitoring; monitoring detections, but reliably and consistently below the maximum contaminant level (MCL); monitoring detections, but not reliably and consistently below the MCL; or in MCL violation. Proportions were estimated separately for surface and ground water systems. An average annual monitoring frequency was also estimated for each monitoring scenario.

Because it is assumed that large systems will coordinate UCMR monitoring with Phase II/V monitoring whenever possible, all but waived systems are able to coordinate at least one Phase II/V sample event with a UCMR sample event. Table 13 presents the proportions, average annual frequencies, and multipliers used in estimating large system analytical costs. The following is an example of how the coincident analytical costs for large systems are estimated:

Scenario:	65.6% of large surface water systems are on a monitoring regime for VOCs reflecting a Standard Monitoring schedule, with an average annual monitoring frequency of 1 (see Table 13).
Assumption:	65.6% of large surface water systems will be able to have one monitoring event that will allow for cost efficiencies for the UCMR VOCs (MTBE and Nitrobenzene) that have analogous methods under the Phase II/V regulations. Therefore, 65.6% of surface water systems will incur three “full cost” laboratory analyses for MTBE and Nitrobenzene at \$150 and one “incremental cost” analysis at \$20 during one year of the three year period 2001 to 2003 (see Table 12a).
Calculation:	<p>The equation below represents total analytical costs for MTBE and nitrobenzene for large surface water systems that are on a Standard Monitoring schedule.</p> $[(\$150) * (65.6\% \text{ of surface water systems}) * (\# \text{ of entry points}) * (3 \text{ monitoring events})] + [(\$20) * (65.6\% \text{ of surface water systems}) * (\# \text{ of entry points}) * (1 \text{ monitoring event})]$

Each monitoring scenario cost is calculated in the same way, and then all are added together to calculate the nationwide cost for large systems to conduct the Assessment Monitoring. For simplicity, it is assumed that one-third of the systems conduct monitoring during each of the three monitoring years. Furthermore, lower costs are also assumed for shipping when UCMR monitoring coincides with current compliance monitoring; national total cost efficiencies are calculated similarly. See Table 14 for the cost efficiencies that were assumed for coincident shipping.

Table 14. Shipping Costs Per Contaminant Group for Assessment Monitoring and Screening Surveys Large Systems Only¹					
<i>Non-Coincident VOCs</i>	<i>Non-Coincident SOCs</i>	<i>Non-Coincident Micro. and Viruses</i>	<i>Coincident VOCs</i>	<i>Coincident SOCs</i>	<i>Coincident Micro. and Viruses</i>
Assessment Monitoring²					
\$8	\$24	\$8	\$0	\$16	\$8
Screening Survey					
\$8	\$32	\$16	\$0	\$32	\$16

1. Shipping estimates are based on 1998 quotes from standard US carriers.
2. Lower shipping costs assume coincident mailing, but separate, extra sample bottles. Higher shipping costs assume all sample bottles are going to contract laboratories separately.

5. Estimates of Burden and Costs to Public Water Systems

UCMR will affect 3,574 public water systems, including non-purchased CWSs and non-purchased NTNCWSs. The labor burden for water systems consists of three primary activities: (1) reading the regulations or State letter; (2) monitoring or monitoring assistance; and (3) reporting and record keeping. Hourly labor rates (including overhead) are estimated at \$28 per hour for staff in water systems serving more than 3,300 people and \$14.50 per hour for systems serving less than or equal to 3,300 (see Sections B.1 and B.2 for inventory and rate assumptions).

Table 15 displays labor and non-labor costs by year for the five-year monitoring cycle. As previously discussed, monitoring under the UCMR will be on a five-year cycle, beginning with the initial five-year cycle of 2001 to 2005. As noted, small systems incur labor costs only. Large systems will incur both labor and non-labor costs, as they are responsible for analytical costs. The majority of system costs are attributed to the Assessment Monitoring component of the UCMR, which is scheduled to take place from 2001 through 2003. One-third of all participating systems are assumed to sample during each of the three years (except for the Index systems, which will conduct Assessment Monitoring during each of 5 years, 2001-2005). Significant analytical costs are also associated with the two Screening Surveys (2002 and 2003) and Pre-Screen Testing (2004), as shown in Table 15.

Table 15. Yearly Cost to Systems for Implementation of the Total UCMR Program, by System Size and by Type of Cost						
Cost Description	2001	2002	2003	2004	2005	Total
800 SMALL SYSTEMS (serving 10,000 or fewer people)						
Assessment Monitoring						
<i>Total System Labor Costs (includes cost for reading regulations, for monitoring and monitoring assistance, and for reporting and record keeping)</i>						
	\$27,870	\$26,920	\$26,920	\$2,500	\$2,500	\$86,710
<i>System Costs for Laboratory Analysis and Shipping</i>						
	\$0	\$0	\$0	\$0	\$0	\$0
Screening Surveys and Pre-Screen Testing						
<i>Total System Labor Costs (includes annual cost for monitoring and monitoring assistance)</i>						
	\$0	\$0	\$0	\$12,620	\$0	\$12,620
<i>System Costs for Laboratory Analysis and Shipping</i>						
	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal — Small System	\$27,870	\$26,920	\$26,920	\$15,120	\$2,500	\$99,330
2,774 LARGE SYSTEMS (serving greater than 10,000 people)						
Assessment Monitoring						
<i>Total System Labor Costs (includes cost for reading regulations, for monitoring, and for reporting and record keeping)</i>						
	\$259,060	\$259,060	\$259,060	\$0	\$0	\$777,180
<i>System Costs for Laboratory Analysis and Shipping</i>						
	\$7,747,520	\$7,747,520	\$7,747,520	\$0	\$0	\$23,242,560
Screening Surveys and Pre-Screen Testing						
<i>Total System Labor Costs (includes cost for monitoring and monitoring assistance)</i>						
	\$0	\$0	\$0	\$11,870	\$0	\$11,870

Table 15. Yearly Cost to Systems for Implementation of the Total UCMR Program, by System Size and by Type of Cost						
Cost Description	2001	2002	2003	2004	2005	Total
<i>System Costs for Laboratory Analysis and Shipping</i>						
	\$0	\$1,421,250	\$1,469,790	\$983,660	\$0	\$3,874,700
Subtotal — Large System	\$8,006,580	\$9,427,830	\$9,476,370	\$995,530	\$0	\$27,906,310
TOTAL - All System Costs	\$8,034,450	\$9,454,750	\$9,503,290	\$1,010,650	\$2,500	\$28,005,640

The nationwide cost to systems for implementing the total UCMR program over the five-year monitoring period is approximately \$28 million. Large systems will incur most of this cost, approximately \$27.9 million. Annual cost per small system for UCMR implementation over the five-year monitoring cycle is approximately \$25 per system, all attributed to labor. Annual cost per large system is estimated to be \$57 for labor plus \$1,955 for analytical (non-labor) costs. Details of per system labor burdens and costs for Assessment Monitoring alone and for the total UCMR program (Assessment Monitoring, Screening Surveys, and Pre-Screen Testing) are presented below in Tables 16a and 16b, respectively. In addition, these tables present a summary of burden and cost per response. “Response” is defined as each required reporting event for the system. All labor and non-labor costs associated with a reporting event (reading the regulations, monitoring, and the reporting itself) are included in the per response cost estimate.

Table 16a. Assessment Monitoring Per System and Per Response Costs				
Burden / Cost	Total over 2001-2005		Annual Average over 2001-2005	
	<i>Small Systems</i>	<i>Large Systems</i>	<i>Small Systems</i>	<i>Large Systems</i>
Number Responses per Respondent	3.0	2.9	0.6	0.6
PER RESPONDENT:				
Labor Cost	\$108	\$280	\$22	\$56
Non-Labor Cost	\$0	\$8,379	\$0	\$1,676

Table 16a. Assessment Monitoring Per System and Per Response Costs				
Burden / Cost	Total over 2001-2005		Annual Average over 2001-2005	
	<i>Small Systems</i>	<i>Large Systems</i>	<i>Small Systems</i>	<i>Large Systems</i>
Burden (labor hours)	5.0	10.0	1.0	2.0
PER RESPONSE:				
Labor Cost	\$36	\$95	\$7	\$19
Non-Labor Cost	\$0	\$2,841	\$0	\$568
Burden (labor hours)	1.7	3.4	0.3	0.7

Table 16b. Total UCMR Per System and Per Response Costs				
Burden / Cost	Total over 2001-2005		Annual Average over 2001-2005	
	<i>Small Systems</i>	<i>Large Systems</i>	<i>Small Systems</i>	<i>Large Systems</i>
Number Responses per Respondent	3.4	3.0	0.7	0.6
PER RESPONDENT:				
Labor Cost	\$124	\$284	\$25	\$57
Non-Labor Cost	\$0	\$9,776	\$0	\$1,955
Burden (labor hours)	5.8	10.2	1.2	2.0
PER RESPONSE:				
Labor Cost	\$36	\$95	\$7	\$19
Non-Labor Cost	\$0	\$3,282	\$0	\$656
Burden (labor hours)	1.7	3.4	0.3	0.7

a. Small Entity Flexibility

Under the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA, or simply RFA), EPA generally is required to conduct a regulatory flexibility analysis describing the impact of the regulatory action on small entities as part of rulemaking. However, under section 605(b) of the RFA, if EPA certifies that the rule will not have a significant

economic impact on a substantial number of small entities, EPA is not required to prepare a regulatory flexibility analysis. Pursuant to section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b) and for the reasons set forth below, the Administrator certifies that this rule will not have a significant economic impact on a substantial number of small entities.

For purposes of RFA analyses for SDWA rulemakings, the Agency defines small entities as systems serving 10,000 or fewer customers. This is the system size category specified in SDWA as requiring special consideration with respect to small system flexibility, so EPA has selected it as the criterion for a small business entity. EPA also consulted with the Small Business Administration regarding this definition and used it in the Consumer Confidence Reports rulemaking (63 FR 44511-44536 (August 19, 1998)). For further information regarding this definition of small entities, see the referenced Federal Register notice.

EPA has determined that the UCMR will affect small water utilities, since it is applicable to a subset of small community and non-transient noncommunity water systems. However, the systems impacted are limited to a representative sample of approximately 800 small public water systems (i.e., those serving 10,000 or fewer) or 1.2 percent of systems in that size category. These systems will be required to conduct monitoring, as specified in the UCMR (i.e., collect and prepare samples for shipping). EPA will assume all costs for testing of the samples and for shipping the samples from these systems to specific certified laboratories located throughout the United States. EPA has set aside \$2 million from the State Revolving Fund (SRF) in Fiscal Years 1998 and 1999, and plans to do so into the future with its authority to set aside SRF monies for the purposes of implementing this provision of SDWA.

EPA has estimated the impact of the proposed rule and concludes that the impact of the rule on small water systems will not be significant. The rationale for this conclusion is that EPA plans to pay the full costs of shipping and testing samples for small systems and does not plan, under any scenario, to ask systems to pay these costs. Thus, the costs to these systems will be limited to the labor hours associated with collecting a sample and preparing it for shipping. EPA will seek to implement an optimum and scientifically credible UCMR program that will provide a firm basis for future regulatory decisions. EPA will aggressively seek the necessary levels of appropriated funds to defray the costs of shipping and testing for small systems.

System costs under both a “Full Implementation” and “Limited Implementation” scenario were estimated to ensure that small systems would not incur significant economic impacts under any circumstance. Cost summaries for both scenarios are provided below. (It is possible that up to 158 additional small systems could be involved in the unlikely event that all small Pre-Screen Testing systems selected fall outside of the national representative sample. Using an assumption of only 800 systems involved, however, is a conservative, or worst case, assumption, when estimating the burden and cost *per* system; i.e., this allocates the total cost and burden of the full implementation over 800 systems versus 958 systems. Hence, this assumption is used in the following estimates.)

Full Implementation Scenario

EPA guidance suggests, in implementing the RFA, that different tests be used to analyze small entity impacts on privately-owned versus publicly-owned entities, due to the different economic characteristics of these ownership types. For publicly-owned systems, EPA guidance suggests that a “revenue test” be used, which compares annual system costs attributed to the rule to the system’s annual revenues. Privately-owned systems are typically submitted to a “sales test”, which involves the analogous comparison of UCMR-related costs to a privately-owned system’s sales. EPA assumes that the distribution of the national representative sample of small systems will reflect the proportions of publicly- and privately-owned systems in the national inventory. The estimated distribution of the representative sample, categorized by ownership type, source water, and system size, is presented in Table 7.

The basis for the UCMR RFA certification under full UCMR implementation is as follows: the average annual compliance costs of the rule represent less than one percent of revenues/sales for the 800 small water systems that will be affected. The EPA estimates that Agency and system costs for implementing small system sampling for the full UCMR program (2001-2005) will be approximately \$15.1 million. Since the Agency specifically structured the rule to avoid a significant impact to small entities by assuming all costs for laboratory analyses, shipping, and quality control, EPA costs comprise approximately 99 percent (\$15.0 million) of the total. (Note that EPA’s contribution to the small system program is assumed to include all small system analytical and shipping costs, as well as all non-labor program support costs.) Table 17 presents the annual costs to small systems and to EPA for the small system sampling program, along with the number of participating small systems during each of the five years of the program.

Table 17. EPA Costs for Small Systems under Full Implementation of UCMR						
Cost Description¹	2001 (AM)	2002 (AM & SS1)	2003 (AM & SS2)	2004 (AM for Index only & PST)	2005 (AM Index only)	Total
<i>Costs to EPA for Small System Program (including Assessment Monitoring, Screening Survey, and Pre-Screen Testing): quality assurance, ongoing coordination, data analysis, analytical costs, shipping costs, and costs for contractor site visits to small Index and Pre-Screen Testing systems²</i>						
	\$3,392,183	\$3,538,029	\$3,533,202	\$3,814,617	\$752,537	\$15,030,568
<i>Costs to Small Systems (including Assessment Monitoring, Screening Survey, and Pre-Screen Testing): additional labor for reading regulations / guidance, sampling activity, and reporting and recordkeeping</i>						
	\$27,871	\$26,915	\$26,915	\$15,116	\$2,499	\$99,316
<i>Total Costs to EPA and Small Systems for UCMR</i>						
	\$3,420,054	\$3,564,944	\$3,560,117	\$3,829,733	\$755,036	\$15,129,884

Table 17. EPA Costs for Small Systems under Full Implementation of UCMR

Cost Description¹	2001 (AM)	2002 (AM & SS1)	2003 (AM & SS2)	2004 (AM for Index only & PST)	2005 (AM Index only)	Total
<i>Number of Systems to Monitor each Year: Non-Index and Index in 2001-2003, Index only in 2004-2005³</i>						
<i>Public</i>	191	191	191	107	21	533
<i>Private</i>	96	96	95	81	9	267
TOTAL	287	287	286	188	30	800

1. AM = Assessment Monitoring; SS1 and SS2 = Screening Surveys Years One and Two; PST = Pre-Screen Testing.
2. EPA costs during the year 2001 include some start-up costs that may be actually be incurred during the year 2000.
3. Total number of systems is 800. All 30 Index systems sample during each year 2001-2005. One-third of Non-Index systems sample during each year from 2001-2003. A total of 180 small systems conduct Screening Surveys during each year, 2002 and 2003. 158 small systems conduct the Pre-Screen Testing during 2004. The rows do not add across, because the same 30 Index systems sample during every year of 5-year implementation cycle, and because the Screening Survey systems are a subset of the original sample of 800 systems (e.g., they are conducting multiple types of sampling). Pre-Screen Testing Systems may or may not be a subset of the original 800 systems.

System costs are attributed to the additional labor required for reading State letters, monitoring, reporting, and record keeping. Assuming that systems will efficiently conduct UCMR sampling (e.g., coincident with other required monitoring), the estimated average annual per system labor burden for full UCMR implementation will be: \$20 (1.0 hours) for ground water systems; and \$35 (1.6 hours) for surface water systems. In total, ground water and surface water systems average 1.2 hour of burden per year with an average annual cost of \$25. Average annual cost, in all cases, is less than 0.3 percent of system revenues/sales. Therefore, as stated above, the Administrator certifies that this proposed rule, as funded by EPA, will not have a significant economic impact on small entities. Tables 18a and 18b below present the estimated economic impacts in the form of revenue/sales tests for publicly- and privately-owned systems. Further details of small system burden and cost are presented in Tables 16a and 16b.

Table 18a. UCMR Full Implementation Scenario: Analysis for Publicly-Owned Systems (2001-2005)								
System Size	Annual Number of Systems Impacted ¹		Average Annual Hours per System (2001-2005)		Average Annual Cost per System (2001-2005)		“Revenue Test” ²	
	<i>Number</i>	<i>% of US Total</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>
GROUND WATER SYSTEMS								
500 and under	5.8	0.01%	0.8	3.0	\$10.99	\$42.78	0.07%	0.26%
501 to 3,300	41.4	0.34%	0.8	3.8	\$11.44	\$54.38	0.01%	0.05%
3,301 to 10,000	42.5	1.77%	1.0	4.6	\$29.29	\$128.80	0.01%	0.03%
SURFACE WATER SYSTEMS								
500 and under	2.3	0.12%	2.9	0.0	\$42.49	\$0.00	0.15%	0.00%
501 to 3,300	17.9	0.98%	1.6	5.2	\$22.66	\$75.40	0.01%	0.04%
3,301 to 10,000	30.5	3.03%	1.3	5.0	\$35.28	\$140.00	0.00%	0.02%

1. Calculated as 1/5 of the Non-Index sample, plus all Index systems for each year from 2001-2005; actual sampling for Non-Index systems takes place over three years, while that of Index systems occurs over each of five years. Since Screening Survey systems are a subset of the Assessment Monitoring systems, this does not affect the average annual number of systems (e.g., these systems are conducting monitoring for two components of the UCMR program at the same time).
2. “Revenue Test” was used to evaluate the economic impact of an information collection on small government entities (i.e., publicly-owned systems). Costs are presented as a percentage of median annual revenue in each size category.

Table 18b. UCMR Full Implementation Scenario: Analysis for Privately-Owned Systems (2001-2005)								
System Size	Annual Number of Systems Impacted ¹		Average Annual Hours per System (2001-2005)		Average Annual Cost per System (2001-2005)¹		“Sales Test”²	
	<i>Number</i>	<i>% of US Total</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>
GROUND WATER SYSTEMS								
500 and under	21.4	0.05%	0.8	3.0	\$10.99	\$42.78	0.07%	0.27%
501 to 3,300	18.8	0.15%	0.8	3.8	\$11.44	\$54.38	0.01%	0.05%
3,301 to 10,000	11.9	0.50%	1.0	4.6	\$29.29	\$128.80	0.00%	0.02%
SURFACE WATER SYSTEMS								
500 and under	6.5	0.34%	2.9	0.0	\$42.49	\$0.00	0.19%	0.00%
501 to 3,300	8.1	0.45%	1.6	5.2	\$22.66	\$75.40	0.01%	0.05%
3,301 to 10,000	8.5	0.85%	1.3	5.0	\$35.28	\$140.00	0.01%	0.02%

1. Calculated as 1/5 of the Non-Index sample, plus all Index systems for each year from 2001-2005; actual sampling for Non-Index systems takes place over three years, while that of Index systems occurs over each of five years. Since Screening Survey systems are a subset of the Assessment Monitoring systems, this does not affect the average annual number of systems (e.g., these systems are conducting monitoring for two components of the UCMR program at the same time).
2. “Sales Test” was used to evaluate the economic impact of an information collection on small private entities (i.e., privately-owned systems). Costs are presented as a percentage of median annual sales in each size category.

Limited Implementation Scenario

Despite the expected \$2 million per year budget, EPA recognizes that funding levels vary from year to year and thus cannot guarantee the precise amount that will ultimately be available to implement its UCMR program (although a considerable portion of those funds are currently on hand). In the event that an amount commensurate with funding the optimal UCMR program (in terms of numbers of small systems sampled and numbers of contaminants analyzed) may not be available, the Agency will adjust the UCMR program to accommodate the available funds. This adjustment may necessitate use of

relatively fewer sample sites, testing of fewer contaminants, or both. EPA would use a random number generator select a representative sample of systems that would accommodate the available funds.

While the Agency considers the scenario of no additional funding to be unlikely, EPA also evaluated the scenario of “current funds only” for purposes of this RFA analysis. This “current available funds” scenario is the case in which EPA would receive no further funding for small system testing beyond the \$4 million that is currently set aside from the State Revolving Funds from Federal Fiscal Years 1998 and 1999. EPA anticipates funding this program such that no small system would incur testing costs as intended in the legislation. By analyzing small system impact under such a scenario, EPA can demonstrate that, regardless of funding levels, no small systems will be significantly impacted by the UCMR. Given the flexibility of the proposed rule, EPA can ensure defensible results, balanced with available funding.

In the optimal anticipated program, the sample of 800 systems is derived by applying a 99 percent confidence level, with 1 percent error tolerance. To accommodate a \$4 million budget, the representative sample of small systems would be reduced to approximately 400 systems. This smaller sample size would be less rigorous than the anticipated sample of 800 systems; the sample error would be approximately plus or minus 5 percent, affecting the scope and confidence of the national decisions that could be derived. These 400 systems would incur only labor costs related to collecting and packing the samples, while EPA would pay the shipping and testing costs for these samples.

With the currently available \$4 million, EPA will be able to fund approximately 48 percent of the planned Assessment Monitoring program for small systems. To estimate the costs under this scenario, it is assumed that only the Assessment Monitoring component of UCMR would be implemented. It is assumed that the smaller representative sample would be allocated across system size categories in the same proportions as those in the sample of 800 systems, with ten of these systems being Index sites, and will also reflect the proportions of publicly- and privately-owned systems in the national inventory of PWSs, as seen in Table 8. Furthermore, EPA preparations for the Screening Surveys, Pre-Screen Testing, and future UCMR cycles are assumed to be dropped, since with limited funds, current implementation would take precedence over planning for further monitoring.

The Agency is concerned that a reduced sample size will reduce the statistical likelihood that the observed contaminant occurrence levels will be representative of actual occurrence across the nation. Because of this, the Agency will actively pursue funding for the full program described in this Preamble.

Under the limited funding scenario, EPA costs for Assessment Monitoring would primarily be incurred from 2001 to 2003. Systems are assumed to sample during one year of the three-year period, with one-third of systems sampling during each year. However, Index systems are assumed to monitor during each of the three Assessment Monitoring years. The distribution of costs to EPA and small systems over the entire five years is presented below in Table 19.

Table 19. EPA Costs for Small Systems — Limited \$4 million Program						
Cost	2001	2002	2003	2004	2005	Total
<i>Costs to EPA for Assessment Monitoring Program: Quality assurance, ongoing coordination, data analysis, shipping costs, testing costs, reporting and analysis costs, and costs for contractor site visits to “Index” systems</i>						
	\$1,367,947	\$1,082,341	\$1,082,341	\$280,422	\$186,948	\$3,999,999
<i>Costs to Small Systems (Assessment Monitoring): including additional labor for reading regulations / guidance, sampling activity, and reporting and recordkeeping</i>						
	\$13,405	\$11,756	\$11,756	\$0	\$0	\$36,917
Total Costs to EPA and Small Systems for Assessment Monitoring						
	\$1,381,352	\$1,094,097	\$1,094,097	\$280,422	\$186,948	\$4,036,916
Number of Systems each Year: Assessment Monitoring and Index Systems in 2001-2003¹						
<i>Public</i>	92	92	92	0	0	264
<i>Private</i>	46	46	46	0	0	132
TOTAL	138	138	138	0	0	396

1. Rows do not add across because the 10 Index systems sample during each year 2001-2003. One-third of Non-Index systems sample during each year from 2001-2003.

Under this limited \$4 million program, EPA costs represent approximately 99 percent of the national cost for the small system sampling program. As in full UCMR implementation, small system costs are attributed to the additional labor required for reading State letter, monitoring, reporting, and record keeping. It is estimated that under the limited program (e.g., Assessment Monitoring only), the average annual per system labor burden will be: \$15 (0.7 hours) for ground water systems; and \$27 (1.2 hours) for surface water systems. In total, ground water and surface water systems average 0.9 hours of burden per year, with an average annual cost of \$19. System burdens here are lower than in the full implementation scenario primarily because no Screening Surveys or Pre-Screen Testing will occur under this scenario.

Through revenue and sales tests, determinations of economic impact are presented below in Tables 20a and 20b, respectively. Under this limited \$4 million program, systems will be subject to less required monitoring than in the full UCMR program. For both full UCMR implementation and the limited funding scenario, average annual cost is in all cases lower than 1 percent of annual sales/revenues. Thus, even in this worst case, limited implementation scenario, EPA certifies that this proposed rule would not impose a significant economic impact on small entities.

Table 20a: UCMR Limited Implementation Scenario: Analysis for Publicly-Owned Systems (2001-2005)								
System Size	Annual Number of Systems Impacted ¹		Average Annual Hours per System (2001-2005)		Average Annual Cost per System (2001-2005)		“Revenue Test” ²	
	<i>Number</i>	<i>% of US Total</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>
GROUND WATER SYSTEMS								
500 and under	2.2	0.00%	0.6	1.9	\$8.06	\$27.41	0.05%	0.17%
501 to 3,300	17.1	0.14%	0.6	2.1	\$9.15	\$30.89	0.01%	0.03%
3,301 to 10,000	17.2	0.72%	0.8	2.6	\$22.16	\$73.92	0.00%	0.02%
SURFACE WATER SYSTEMS								
500 and under	0.3	0.01%	1.1	0.0	\$15.41	\$0.00	0.05%	0.00%
501 to 3,300	6.0	0.33%	1.2	3.2	\$17.07	\$46.98	0.01%	0.03%
3,301 to 10,000	12.6	1.25%	1.1	3.1	\$31.35	\$87.36	0.00%	0.01%

1. Calculated as 1/5 of publicly-owned Non-Index sample, plus all public Index systems for each year from 2001-2003; actual sampling for Non-Index takes place over three years, Index over each of three years.
2. “Revenue Test” was used to evaluate the economic impact of an information collection on small governments (e.g., publicly-owned systems). Costs are presented as a percentage of median annual revenue in each size category.

Table 20b: UCMR Limited Implementation Scenario: Analysis for Privately Owned Systems (2001-2005)								
System Size	Annual Number of Systems Impacted ¹		Average Annual Hours per System (2001-2005)		Average Annual Cost per System (2001-2005)¹		“Sales Test”²	
	<i>Number</i>	<i>% of US Total</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>	<i>Non-Index</i>	<i>Index</i>
GROUND WATER SYSTEMS								
500 and under	8.0	0.02%	0.6	1.9	\$8.06	\$27.41	0.05%	0.17%
501 to 3,300	7.8	0.06%	0.6	2.1	\$9.15	\$30.89	0.01%	0.03%
3,301 to 10,000	4.8	0.20%	0.8	2.6	\$22.16	\$73.92	0.00%	0.01%
SURFACE WATER SYSTEMS								
500 and under	0.8	0.04%	1.1	0.0	\$15.41	\$0.00	0.07%	0.00%
501 to 3,300	2.7	0.15%	1.2	3.2	\$17.07	\$46.98	0.01%	0.03%
3,301 to 10,000	3.5	0.35%	1.1	3.1	\$31.35	\$87.36	0.01%	0.02%

1. Calculated as 1/5 of the Non-Index sample, plus all Index systems for each year from 2001-2005; actual sampling for Non-Index systems takes place over three years, while that of Index systems occurs over each of three years.
2. “Sales Test” was used to evaluate the economic impact of an information collection on small private entities (e.g., privately-owned systems). Costs are presented as a percentage of median annual sales in each size category.

C. States/Primacy Agents

State implementation requirements are categorized into four major activities, as follows:

- EPA coordination activities
- Data management and support
- Laboratory training
- Program implementation

Table 21 presents the schedule of UCMR-related activities for States/Primacy Agencies. States will undertake some start-up activities in the year 2000, with the remaining activities occurring during 2001 through 2005. The State Resource Model is used by the Agency in preparing this cost analysis. A detailed description of the State Resource Model is documented in the *Resource Analysis Computer Program for State Drinking Water Agencies*, January 1993. The model was designed by the Office of Ground Water and Drinking Water to enable primacy agents to estimate the resources needed to fund their drinking water programs. The model identifies a comprehensive list of activities required to operate a drinking water program, including technical and training activities, as well as management and clerical support for these activities. The assumptions used in the model are based on input from a workgroup of 39 States and the Association of State Drinking Water Administrators (ASDWA). Inputs to the State Resource Model were scaled in relation to other rules and activities. Also, UCMR activities are expected to be coordinated with other drinking water program activities (as is the current unregulated monitoring). Thus, related burdens will generally be incremental additions to program activities.

Table 21. Schedule of State UCMR Activities						
Activity	2000	2001	2002	2003	2004	2005
EPA Coordination Activities						
Review and Respond to EPA's proposed State Monitoring Plan ¹ ; Regulation Adoption	x					
Ongoing Coordination with EPA	x	x	x	x	x	x
Data Management and Support						
Update Data System	x					
Data Entry, Record Keeping		x	x	x	x	x
Laboratory Training						
Training for Compliance Reporting	x					

Table 21. Schedule of State UCMR Activities						
Activity	2000	2001	2002	2003	2004	2005
Technical Training	x					
Program Implementation						
System Schedule Notifications and ongoing Support ²	x	x	x	x	x	x
Data Review and Enforcement			x	x	x	x
Overhead						
Overhead Costs (clerical, management, staff training)	x	x	x	x	x	x

1. This includes States' requirements to either accept the EPA-proposed State monitoring plan or submit an alternative plan, as specified in §142.16(g). The States' initial response to EPA must also include specification of the most vulnerable monitoring period, if it differs from the default May-July period specified in the rule. States must also submit to EPA their list of systems "most vulnerable" to the Pre-Screen Testing contaminants.
2. This includes States' requirements to notify systems in writing of the system monitoring requirements under UCMR, including the sampling schedule and the vulnerable period during which the system must sample.

1. State Coordination with EPA

EPA assumes that States will conduct several activities involving coordination with EPA regarding UCMR rule adoption. Each State will implement the formal steps for regulation adoption and primacy application necessary to administer the UCMR. States will also review and respond to EPA's nationwide statistical sampling plan that designates the 800 systems serving 10,000 or fewer people that will be subject to the requirements of UCMR. The sampling plan review/response includes specification of the State's most vulnerable period for Assessment Monitoring (if different from the default specified) and identification of up to 25 vulnerable systems for Pre-Screen Testing. States will also likely require some time for ongoing coordination with EPA regarding the requirements of UCMR.

Input to the State Resource Model for EPA coordination activities includes:

1. State Monitoring Plan / Regulation Adoption
 - 90 hours (0.05 Full Time Equivalent (FTE)) per State in year 2000; includes regulation adoption and primacy application, review and response to EPA's proposed State Monitoring Plan, identification of Pre-Screen Testing systems, and identification of State's "most vulnerable" period (if different from the May-July default), and
2. Ongoing coordination with EPA

- 36 hours (0.02 FTE) per State/Primacy Agent per year; includes meetings/discussion regarding implementation and enforcement issues.

2. Data Management and Support

EPA assumes that each State will incur burdens and costs associated with UCMR-specific data management and record keeping. The only non-labor cost that any State is expected to incur is the cost for contractor assistance associated with updating the State drinking water system database. According to results of an ASDWA survey, over 90 percent of States are able to electronically report results from the current round of unregulated contaminant monitoring to SDWIS.³ Thus, 10 percent of the States will need to update their data systems for the UCMR electronic reporting requirements. It is estimated that during the year 2000, this 10 percent of States will require contractor support to assist them in updating their systems at an estimated cost of \$25,000 per State. (Note, however, that this cost estimate is conservative, since some system upgrades may be as simple as procuring routine commercial software and entering the data into a general-use spreadsheet or database.) In addition, all 56 States will need some adjustment to integrate the new data elements (i.e., modifying data entry fields).

States will require an estimated average of 0.5 hours per system to enter system data into the State database and to manage the hard copies of system information related to the UCMR. Although systems will be required to report electronically, States can waive this requirement to relieve system burden. Thus, the estimate for data management burden per system is also conservative.

States will be responsible for electronic reporting of the results of all unregulated contaminant monitoring conducted under UCMR, as part of the States' routine reporting to SDWIS. Therefore, other than the one-time cost of updating State data systems, no State burden is allotted for electronic SDWIS reporting. (Note: The UCMR data will be reported to SDWIS for electronic routing to the National Drinking Water Contaminant Occurrence Database (NCOD).)

Input to the State Resource Model for data management and support includes:

1. Update State Data System
 - 18 hours (0.01 FTE) per State are allotted for updating State data systems in the year 2000. With 90 percent of States requiring only minor changes to their databases, EPA makes a conservative assumption that each State would require 0.01 FTE to update their systems. The model assumes an additional \$25,000 in the year 2000 for contractor assistance to upgrade the database, for 10% of the States, and
2. File Management and Data Entry for Monitoring Results (on a quarterly basis)

³ “Assessment of State and Federal Database Systems (Association of State Drinking Water Administrators Survey Results)”, prepared for USEPA by ISSI, Inc., August, 1997; and “Assessment of the Status and Availability of Contaminant Occurrence Data”, prepared for USEPA by ISSI, Inc., March 1998.

- 0.5 hours per system per year for 2001-2005; includes record keeping and data entry into State database.

3. Laboratory Training

The Agency allocates approximately 20 hours per State to provide workshops in the year 2000 for laboratory supervisors to demonstrate the reporting requirements under the UCMR. Workshops will also cover technical training for new laboratory procedures, including the procedure for analyzing *Aeromonas hydrophila*.

Input to the State Resource Model for training for certified labs includes:

1. Training for Compliance Reporting
 - 16 hours (2 days) per State in the year 2000 is allotted for training laboratories how to properly report data under the UCMR, which includes informing the laboratories of the list of required data elements, and
2. Technical Training
 - 16 hours (2 days) per State in the year 2000 is allotted for technical training for laboratories that serve large systems; this training would cover the specific laboratory procedures that would be required under the UCMR.

4. Program Implementation

The State burden for program implementation activities is assumed to include: sending rule requirements and monitoring schedules to each system, reviewing of system data, responding to owner/operator inquiries, and issuance of enforcement notices. States will spend an estimated 2 hours per regulated system, informing each system of the UCMR requirements, the sampling schedule, and the system's role in the sample collection. States are assumed to notify all systems at least 90 days prior to their required sampling schedule. States are assumed to receive phone calls from water systems regarding the requirements of the UCMR, and are estimated to spend 0.5 hours per system per year responding to inquiries from systems that are monitoring during that year.

Each State will need to review the system monitoring results which are maintained in their database. For simplification, it is assumed that one-third of the 3,574 systems monitor in each of three years during the years 2001 through 2003. States are assumed to spend four days per 100 systems per year in 2002 through 2005 to review each system's UCMR data.

States are assumed to issue a notice of violation to systems incurring a UCMR monitoring and reporting violation. Based on the assumptions used in the State Resource Model, one percent of systems serving ≤ 500 people, and 0.8 percent serving more than 500 people are estimated to incur monitoring and reporting violations for failure to conduct the UCMR monitoring. The State Resource Model also assumes that a State would require one hour to issue each notice of violation. States are assumed to issue enforcement actions during the years 2002 through 2005. It is assumed that only half of the systems in violation will be issued a notice, and that other half would come into compliance with a brief reminder phone call. This relatively low rate of enforcement and compliance activity is assumed for two reasons.

First, the UCMR is relatively simple to follow, with compliance assured as long as the system submits the correct sampling data. Second, the EPA is paying for the sample analysis for those small systems most likely not to sample because of costs.

States may apply for a statewide waiver from UCMR monitoring for a specific contaminant. A waiver may be provided contingent upon the provision of “proof that each of these analytes has not been detected in the source waters or distribution systems, or produced, used, stored, disposed, land applied, released, or naturally present in the State for a period of at least fifteen years prior to the date of application.” The Agency anticipates, after consulting with States, that States are unlikely to apply for these waivers; therefore, no costs or burdens have been estimated for this activity.

Input to the State Resource Model for program implementation includes:

1. Notify Systems of Schedule
 - 2 hours per system letter are allotted to each State,
2. Review Monitoring Results
 - 32 hours (4 days) per 100 systems per year were allotted from 2002-2005; this includes compliance determination and review of data for quality control,
3. Issue Public Notice / Notice of Violation
 - 1 hour per system in violation, assuming that 1% of systems serving ≤ 500 people and 0.8% of systems serving > 500 people would incur monitoring and reporting violations during 2002-2005; burden would involve sending half of the systems a notice of violation and briefly phoning half with a reminder of program requirements, and
4. Respond to Owner/Operator Inquires
 - 0.5 hours per system per year (2001-2005); involves responding (via phone) to owner / operator inquiries regarding compliance with the UCMR.

5. Overhead

Finally, the State Resource Model applies proportional overhead costs to the estimated total program staffing, as described below:

1. Supervision
 - 1,800 hours (1 FTE) of supervisory staffing for every 10 FTEs; standard State Resource Model allocation,
2. Rule Training
 - 40 hours (5 days) per FTE in the year 2000; standard State Resource Model allocation (training only in the initial year of rule adoption, with all technical staff to participate in rule-specific training),
3. Clerical

- 1,800 hours (1 FTE) for clerical staff for every 10 staff ; standard State Resource Model allocation; includes general secretarial assistance (which is over and above the filing and data entry labor previously accounted), and
4. Ongoing Training
- 40 hours (5 days) per FTE per year; includes attending professional conferences, attending classes for skills such as public speaking and computers, and participating in seminars such as employee health and well being and stress management.

6. Estimating the Burden and Cost to States

EPA estimates that the total burden over 6 years (2000-2005) for 56 States/Primacy Agencies to implement the UCMR will be 54,180 hours, with a total cost for labor of \$2.3 million. Although State costs will primarily be attributed to labor, it is assumed that some States will incur a one-time non-labor cost for contractor assistance to update the State database to comply with UCMR electronic reporting requirements. On a nationwide basis, this one-time non-labor cost is estimated to be \$140,000. On average, the annual cost to each State including labor and non-labor costs for implementing the UCMR program is expected to be \$8,240, with an annual labor burden per State of 194 hours (1/10 FTE). EPA emphasizes, however, that these are *average* State costs. Some States may incur annual costs that are greater than the average, and some may incur little or no costs, depending on the number of systems in the State Monitoring Plan and upon structure of the State drinking water program. (Note: Many aspects of State burden are related to the number of systems involved. With the UCMR design, using a statistical sample of small systems, each State will have very few systems, relative to their normal program population of systems. For example, nearly 75 percent of all States will have less than 10 small systems involved.) See Tables 22 and 23 for a detailed summary of estimated State burdens and costs.

As discussed, burdens and costs to the States are estimated using the standard State Resource Model. The resource model applies standardized overhead labor and costs to the base resources required to run the UCMR program, including clerical and supervisory staff to support the UCMR, and on-going training. The average State labor rate applied in estimating State labor costs is \$40 per hour, the rate used for other drinking water program cost analyses. (The specific assumptions used to develop estimates of the States' activity burdens and costs were discussed previously, in Section C.1 through C.5.)

Table 22. Yearly Total Cost to All States/Primacy Agencies for Implementation of UCMR, by Type of Cost¹

Cost Description	2000	2001	2002	2003	2004	2005	Total
<i>EPA Coordination Activities (review of State Monitoring Plan, identification of Pre-Screen Testing systems, most vulnerable period, regulation adoption, primacy application, ongoing coordination)</i>							
	\$279,360	\$77,760	\$89,420	\$89,420	\$89,420	\$89,420	\$714,800
<i>Data Management and Support (updating data system, data entry, record keeping)</i>							

Table 22. Yearly Total Cost to All States/Primacy Agencies for Implementation of UCMR, by Type of Cost¹

Cost Description	2000	2001	2002	2003	2004	2005	Total
	\$260,960	\$21,600	\$24,840	\$24,840	\$24,840	\$24,840	\$381,920
<i>Laboratory Training (for reporting requirements and technical training)</i>							
	\$45,760	\$0	\$0	\$0	\$0	\$0	\$45,760
<i>Program Implementation (system schedule and rule introduction, review of data, system support, enforcement)</i>							
	\$100,800	\$122,400	\$175,320	\$116,640	\$124,920	\$124,920	\$765,000
<i>Overhead Costs (supervision, staff training, clerical)</i>							
	\$131,251	\$48,787	\$63,708	\$50,799	\$52,620	\$52,620	\$399,785
TOTAL - All	\$818,131	\$270,547	\$353,288	\$281,699	\$291,800	\$291,800	\$2,307,265

1. Costs include implementation and oversight of the Assessment Monitoring, Screening Survey, and Pre-Screen Testing components of the UCMR. All costs are attributed to State labor, except for a one time allowance during the year 2000 for updating of State databases for electronic reporting.

Table 23. UCMR Per State and Per Response Costs

Burden / Cost	Total for 2000-2005 ¹	Annual Average (over 5-year implementation period)
Number of Responses per Respondent ²	24	4.8
PER RESPONDENT:		
Labor Cost	\$38,701	\$7,740
Non-Labor Cost	\$2,500	\$500
Burden (labor hours)	967.5	193.5
PER RESPONSE:		
Labor Cost	\$1,612	\$322
Non-Labor Cost	\$105	\$21
Burden (labor hours)	40.3	8.1

1. State costs are estimated over the period 2001-2005, with some start up costs in the year 2000. Costs are averaged on a five-year basis to represent average annual costs of the five-year implementation cycle.
2. States are assumed to have a total of four responses per year, since they are required under the drinking water program to send data updates to SDWIS on a quarterly basis.

D. Estimating Agency Burden and Cost

EPA Headquarters and Regional offices will incur UCMR-related burden and costs to oversee State public water system programs, and to process and analyze the UCMR data. EPA implementation activities are categorized, as follows, into three major categories.

- *Regulatory support activities:* includes non-labor costs for laboratory capacity and QA/QC; implementation of small system testing program, data reporting and review protocol; general technical support and guidance documents; data quality review and analysis
- *Analytical cost for small system testing program:* includes non-labor costs for direct analytical and shipping costs for small systems for all components of the UCMR program; coordinate and fund on-site monitoring for Index Systems and small Pre-Screen Testing systems; and
- *National and regional oversight and data analysis:* includes EPA labor costs for management oversight and review and evaluation of data for Assessment Monitoring, Screening Surveys and Pre-Screen Testing.

Additional activities will be conducted prior to the implementation of the rule and therefore are not considered as part of this cost analysis. These activities are:

- Developing regulations and necessary guidance materials,
- Developing guidance documents for all systems,
- Providing logistical coordination for laboratory and sampling effort (e.g., preparing request for proposal, inter-agency agreement), and
- Modifying SDWIS to accommodate unregulated contaminants.

Table 24 below presents the schedule for EPA activities, which will primarily occur during 2001 through 2005, with start-up activities occurring during 2000.

Table 24. Schedule of Agency Activities						
Activity	2000	2001	2002	2003	2004	2005
REGULATORY SUPPORT ACTIVITIES						
Ensuring Laboratory Capacity; QA/QC Programs	x	x	x	x	x	x
Implementation of Small System Testing Program; Establishing Reporting and Data Review Protocol	x	x	x	x	x	
Technical Support / Guidance Document Development	x	x	x	x	x	x
Data Quality Review and Analysis		x	x	x	x	x
ANALYTICAL COST FOR SMALL SYSTEM TESTING PROGRAM						

Table 24. Schedule of Agency Activities						
Activity	2000	2001	2002	2003	2004	2005
Analytical and Shipping Costs for Index and Non-Index Systems		x	x	x	x	x
Contractor Costs for Index System Site Visits and Small Pre-Screening Testing System Site Visits		x	x	x	x	x
NATIONAL AND REGIONAL OVERSIGHT & DATA ANALYSIS						
EPA Direct Labor Costs for Program Oversight and Data Management	x	x	x	x	x	x

1. Regulatory Support Activities

a. Laboratory Capacity and QA/QC Activities

EPA anticipates incurring various contractor costs related to national laboratory capacity and laboratory quality assurance and control. Specifically, cost estimates assume the following activities:

- **QC Audits of Contract Laboratories:** EPA or contractor on-site QC audits of laboratories for small system testing program, includes costs for specific task only, for quality control surveys at 1 to 5 laboratories per year, survey cost assumptions are summarized in Table 25,
- **Additional Contract Laboratory QC / Screening Survey Testing:** additional QA/QC analysis and recordkeeping, over and above routine analytical costs for small system contaminant testing (e.g., CERCLA-CLP analogy),
- **Development of Laboratory Capability:** preparation of analytical methods for implementation of Screening Surveys and Pre-Screen Testing (e.g., testing for List 2 and List 3 contaminants), as well as preparation of related QC protocols; also, in preparation for round two of the UCMR, activities will include review and preparation of analytical methods for new contaminant list, new testing program, further refinement of 1999 contaminant methods for new cycle, preparation of related QC protocols, for small system testing program, and
- **Ongoing Refinement of Laboratory Methods:** review operations of small systems' contract laboratory methods, refinement of analytical methods for routine use on a national basis, particularly for contaminants that are to become regulated.

b. Implementation of Small System Testing Program / Reporting and Data Review Protocol

EPA contractor activities which are assumed for cost estimates of logistical support of the small system testing program include the following:

- **Small System Plan Integration / Field Coordination:** logistical planning and implementation of the Index System and Pre-Screen Testing site selection and field efforts; technical integration of State Monitoring Plans; confirmation of systems in sample, schedules, linking to laboratories, and
- **Establish Reporting System and Protocol for Small System Program:** develop electronic reporting system for routing and reporting of testing results, among labs, small systems, States, and EPA; accommodate routing of data for QC review and analysis; ensure timely program performance checks and changes, and timely submission of QC'd data to SDWIS/NCOD.

c. Technical Support / Guidance Document Development

Technical support and guidance document development are all-encompassing activities which cannot be considered directly attributable to the small system program, but rather, in support of general program implementation. EPA contractor activities which are assumed for cost estimates include the following:

- **General External Laboratory QC Program:** development of QC Program (certification, proficiency testing/standards) for general use by laboratories conducting methods (*not small systems*); begin development of new guidance documents and methods/QC manuals in preparation for the second UCMR cycle, and
- **Technical Support for Rule Amendments / Guidance Documents:** technical analysis and support for development of Screening Surveys, Pre-Screen Testing, Methods and QC Manuals, and necessary Guidance Documents; as well as a written analysis of program operations, lessons learned, Index System characteristics; also, to provide technical analysis and support for development of new contaminants list, methods review, new statistical small system sampling frame, targeting options in preparation for the second UCMR cycle.

d. Data Quality Review and Analysis

EPA contractor activities which are assumed for data quality review and analysis costs include the following:

- **Data Quality Review and Analysis:** continuous analysis of lab results; comparison among labs; Index system results comparison with small system data; and data quality checks and review; to assess Screening Survey testing performance and quality to ascertain problems before confirmation and reporting; review of all program data, and NCOD review.

2. Analytical Costs for Small System Testing Program

a. Small System Analytical and Shipping Costs

The single largest cost to EPA for implementation of the UCMR is for small system sample analyses. EPA will pay for the analytical and shipping costs for all small systems in the national representative sample — including Assessment Monitoring, Screening Surveys, and Pre-Screen Testing.

Analytical costs are a function of system sampling schedules (see Table 10), the number of systems and sampling stations (see Tables 4-8), and the cost of the analyses (Tables 12a, 12b, and 12c). The majority of Assessment Monitoring costs are incurred from 2001 to 2003, with costs for the Index System testing extended through 2004 and 2005; Screening Survey costs are incurred in 2002 and 2003; and Pre-Screen Testing in 2004.

EPA expects to incur some quality control costs for the small system testing program that will not be incurred by the large systems. Specifically, EPA plans to send duplicates of ten percent of small system samples to a separate laboratory for analysis, and plans to collect some additional, standard water quality parameters for each sampling station at both Index and Non-Index systems. The quality control duplicates are intended to provide standard, real time, QC checks among the different contract laboratories. Water quality parameters will include some anions, cations, chlorine residuals, nitrate, total coliform, temperature, hardness, and specific conductance. This information is intended to enhance the use and interpretation of the UCMR results, providing data on water quality characteristics that may affect contaminant stability and allow analysis of co-occurrence, for example.

In addition, EPA plans to collect in depth system operation information from the Index Systems. Contractors will collect detailed observations of system operations that may effect contaminant occurrence, such as nature of source water (what type of aquifer or source water body), number of wells, well depth, treatment, configuration of source water intake, treatment, entry points, distribution systems, and how are sources used (seasonally, blended, etc.). It is assumed that additional costs attributed to this information collection will be incurred over the first three years of the UCMR, with in depth surveys conducted at 10 Index Systems per year.

b. Contractor Costs for Index and Small Pre-Screen Testing System Site Visits

EPA also expects to incur significant costs related to contractor site visits to both Index Systems and small Pre-Screen Testing systems. EPA assumes that it will pay for contractor site visits to conduct Assessment Monitoring at 30 Index Systems, for each year from 2001 to 2005. In addition, EPA has estimated costs for contractor site visits to approximately 150 small Pre-Screen Testing systems during the year 2004. With each of the Assessment Monitoring and Pre-Screen Testing samples, contractors will collect water quality parameters at both the Index and Pre-Screen Testing Systems. Cost assumptions for both the Index and Pre-Screen Testing visits are summarized below in Table 25.

Table 25. EPA Contractor Costs

Contractor Costs for Each Index System Visit

Table 25. EPA Contractor Costs			
<i>Hourly Labor Cost¹</i>	<i>Hour Burden²</i>	<i>Travel Cost (per diem plus air and ground travel)³</i>	<i>Cost Per Visit</i>
\$34.62	22.20	\$770.00	\$1,538.56
Contractor Costs for Each Pre-Screen Testing System Visit			
<i>Hourly Labor Cost¹</i>	<i>Hour Burden²</i>	<i>Travel Cost (per diem plus air and ground travel)³</i>	<i>Cost Per Visit</i>
\$34.62	22.40	\$770.00	\$1,545.49
Contractor Costs for Laboratory Inspection			
<i>Hourly Labor Cost¹</i>	<i>Hour Burden²</i>	<i>Travel Cost (per diem plus air and ground travel)³</i>	<i>Cost per Lab Inspected</i>
\$34.62	32.00	\$620.00	\$1,727.84

1. Contractor costs assumes one day of site visit labor at \$34.62 per hour.
2. Index Visit Cost: Assumes 1 day of air travel each way, 2 hours for ground travel each way and 1/2 hour for each sampling point with an average of 2.4 entry points, and one distribution sample (for *Aeromonas hydrophila*) per system; Pre-Screen Testing Visits will differ in that 1 hour is allotted for each sampling station.
3. Travel includes: \$500 round trip flight, \$100 for car rental, 2 nights hotel stay, 1 full day food per diem, and 2 days at the proportional meals rate from the January 1998 Federal rate for the Continental U.S.
4. Labor includes: 1 day site inspection, 1 full day travel (assume 2 half days), 1 day report writing, and 1 day for review and response to laboratory response
5. Travel includes: \$350 round trip flight, \$100 for car rental, 2 nights hotel stay, 1 full day food per diem, and 2 days at the proportional meals rate from the January 1998 Federal rate for the Continental U.S.

3. National and Regional Oversight / Data Analysis

While it has not been determined if some of the UCMR regulatory support activities will be carried out by the EPA or by its contractors, there are key management and oversight activities that must be conducted by EPA Headquarters or its Regional offices. These activities are therefore estimated as labor cost and burden to the Agency.

The UCMR program implementation plans assume that EPA will begin preparing for data analysis in the year 2000, and will ensure ongoing evaluation of the data during 2001 through 2005. EPA will also provide management oversight and support at both the Regional and National level to States for assistance and guidance with their UCMR implementation. EPA expects to dedicate between 7 and 9

FTEs each year from 2000 through 2005. Rationale for the estimated FTEs includes, for example, the need for review and approval of the State Plan responses. EPA assumes that it will require 8 hours to respond to each of 50 percent of the States, 20 hours for each of 40 percent, and 40 hours for each of 10 percent of the States. The average hourly salary rate for this EPA activity is assumed to be \$34.62, which is derived from the average salary plus overhead for a federal GS 13 employee.

4. Estimated EPA Costs

The total EPA cost for the entire UCMR program, including regulatory support activities, analytical costs for the small system testing program, national and regional program oversight, and analysis of the data submissions is estimated to be \$20.1 million. The average annual cost over the period 2000 to 2005 will be \$4.0 million. EPA costs for only the Assessment Monitoring component of the UCMR program would be \$15.7 million, with average annual costs of \$3.1 million. EPA costs for UCMR implementation are shown in Table 26; average annual labor and non-labor costs, as well as small system testing program costs are shown in Table 27.

Table 26. Yearly Cost to EPA for Implementation of the UCMR, by Type of Cost							
Cost Description	2000	2001	2002	2003	2004	2005	Total
<i>Regulatory Support Activities: laboratory capacity, QA/QC; small system testing program implementation, establishing reporting and data review protocol; technical support, guidance document development; and data quality review and analysis</i>							
	\$873,456	\$970,184	\$913,456	\$973,456	\$1,013,456	\$825,000	\$5,569,008
<i>Small System Testing for Assessment Monitoring: Analytical and shipping costs for small system Assessment Monitoring, costs for contractor site visits to Index Systems</i>							
	\$0	\$2,078,543	\$2,078,543	\$2,078,543	\$327,537	\$327,537	\$6,890,703
<i>Small System Testing for Screening Surveys and Pre-Screen Testing: Analytical and shipping costs for small system Screening Surveys and Pre-Screen Testing, and costs for contractor site visits to small Pre-Screen Testing systems</i>							
	\$0	\$0	\$766,030	\$791,203	\$2,853,624	\$0	\$4,410,857
<i>National and Regional Oversight and Data Analysis: UCMR management oversight; review and evaluation of data from Assessment Monitoring, Screening Surveys, and Pre-Screen Testing</i>							
	\$603,000	\$495,000	\$495,000	\$675,000	\$495,000	\$495,000	\$3,258,000
TOTAL	\$1,476,456	\$3,543,727	\$4,253,029	\$4,518,202	\$4,689,617	\$1,647,537	\$20,128,568

Table 27. Summary of EPA Burdens and Costs for UCMR Implementation		
Burden / Cost	Total Cost for 2000-2005	Annual Average Cost over 5-year Implementation Cycle¹
Labor Cost	\$3,258,000	\$651,600
Non-Labor Cost	\$16,870,567	\$3,374,113
Total Cost to EPA for UCMR Implementation	\$20,128,568	\$4,025,714
Small System Testing Program Cost (subset of non-	\$15,030,570	\$3,006,114
Burden (labor hours)	81,450	16,290

1. Agency costs are estimated over the period 2001-2005, with some start up costs in the year 2000. These are averaged on a five-year basis to represent average annual costs of the five-year implementation cycle.

E. Change in Burden

1. Current ICR

This background cost document and related ICR, in effect, amend the current drinking water program ICR (EPA #0270.39, OMB #2040-0090). However, the cost estimates related to the unregulated contaminant monitoring program within the current ICR are not used as the baseline costs for this analysis. An itemized listing of the burden and cost estimates provided in the current ICR are listed below in Table 28. The discussion below summarizes the necessity for developing new baseline estimates. The new baseline assumptions and estimates are then provided in the remainder of this section.

Table 28. Unregulated Contaminant Monitoring Burden and Cost Estimates from the Current Drinking Water ICR	
Information Provided in Drinking Water ICR (#0270.39)	Estimates Derived from Current ICR
Unregulated contaminants	Phase II unregulated IOCs and SOCs
Inventory of systems subject to regulation	78,803
Total Number of Responses	1.1 million in 1996 only
Total Number of Responses per Respondent	14 responses per system in 1996
Total Burden for All Systems	29,945 hours
Burden per Response	0.03 hours or 2 minutes per response
Total Cost for All Systems	\$38.6 million
Average Cost per System	\$490 per system in 1996

There are several reasons why it was necessary for EPA to develop a baseline for the current unregulated contaminant monitoring. Chief among them is the fact that the current ICR only deals with unregulated monitoring through generalities, with limited documentation of how cost estimates are derived. The current ICR does not include the complete list of contaminants required, rather it notes only that estimates include the Phase II unregulated IOCs and SOCs. In contrast, the majority of the currently required compounds are VOCs. Further, few details are given on system assumptions (e.g., which systems are involved, how many have ground or surface water sources), entry points/sampling stations, monitoring frequencies, analytical costs, or labor burden assumptions.

The “new” baseline that EPA has developed contains more and newer information regarding system inventories, and labor and non-labor costs. For UCMR and baseline estimations, EPA used more detailed information on system entry points, made available through the ASDWA survey. The public water system inventory used for both the UCMR and the baseline has been specifically edited to correct discrepancies between SDWIS and actual system inventories (see Section B.1 for PWS inventory specifications). In addition, with information that is now known about the practical implementation of the chemical monitoring regulations, EPA estimated the additional labor incurred by systems for unregulated monitoring. Finally, EPA derived baseline analytical costs from more current laboratory pricing schedules.

2. “New” UCMR Baseline

Baseline costs for the existing Phase II/V unregulated contaminant monitoring are estimated for the purposes of this cost analysis. The same general framework and approach is used as for the UCMR Assessment Monitoring program (see Sections B - D of this document). In estimating system and State costs and burdens, the same standard labor rates and activities are used. The same water system inventory numbers are used and complete implementation is assumed.

The existing program includes all systems serving more than approximately 500 people, with many States even collecting data from these smaller systems.⁴ Although systems serving 500 or fewer were generally not required to monitor under the existing rule, data in the Unregulated Contaminant Monitoring Information System (URCIS) show that about one-third of systems serving 500 or fewer people were none-the-less involved in the monitoring; thus, one-third were included in the estimates. Table 29 presents the inventory of systems that were used in estimating system and State baseline costs.

⁴ State collection of unregulated contaminant monitoring data for small systems has been evidenced in the EPA data verification process, in which the EPA visits the primacy agencies to confirm that oversight of PWSs is being conducted according to federal regulations.

Table 29. Number of Systems Sampling Under Existing Phase II/V Unregulated Program			
Size Category	Ground Water Systems	Surface Water Systems	Total Systems
500 and under	15,360	640	16,000
501 to 3,300	12,306	1,820	14,126
3,301 to 10,000	2,404	1,006	3,410
Subtotal ≤ 10,000	<i>30,070</i>	<i>3,466</i>	<i>33,536</i>
10,001 to 50,000	1,254	927	2,181
50,001 and over	204	389	593
Subtotal >10,000	<i>1,458</i>	<i>1,316</i>	<i>2,774</i>
TOTAL	31,528	4,782	36,310

One of the primary differences between the existing unregulated monitoring program and the proposed UCMR is in the list of required contaminants. There are 48 chemical contaminants listed in the existing unregulated program, 14 of which are “discretionary” contaminants that would not significantly effect the cost of analysis.⁵ The 34 required, non-discretionary contaminants and the relevant pricing assumptions used for these calculations are presented in Table 30 (this includes 13 SOCs (#1-13), 1 IOC (#14), and 20 VOCs (#15-34)). While there are more contaminants analyzed than under UCMR, they are derived from fewer analytical methods, and all are derived from standard methods used for routine compliance samples. Also, the monitoring has almost exclusively been conducted coincident with the systems’ standard monitoring framework, allowing systems to primarily incur incremental analytical costs instead of full costs.

⁵

The 14 discretionary contaminants are all VOCs that would be analyzed from the same sample as numbers 15 - 34 on Table 30 and generally do not add further cost.

Table 30. Contaminants Required Under the Existing Phase II/V Unregulated Monitoring Program					
	<i>Contaminant Name</i>	<i>CASRN</i>	<i>Method</i>	<i>Cost</i>	<i>Incremental Cost</i>
1	aldicarb	116-06-3	531.1	\$230	\$30
2	aldicarb sulfone	1646-88-4			
3	aldicarb sulfoxide	1646-87-3			
4	carbaryl	63-25-2			
5	3-hydroxycarbofuran	16655-82-6			
6	methomyl	16752-77-5			
7	aldrin	309-00-2	505, 508, 508.1	\$150	\$20
8	dieldrin	60-57-1			
9	propachlor	1918-16-7	508, 507	no charge	no additional charge
10	butachlor	23184-66-9	507	\$160	\$10
11	metolachlor	51218-45-2			
12	metribuzin	21087-64-9			
13	dicamba	1918-00-9	515.1, 515.2	\$150	no additional charge
14	sulfate	14808-79-8	Various	\$15	\$15
15	1,1,1,2-tetrachloroethane	630-20-6	502.2 (for 15-34)	\$173 (for 15-34)	\$90 (for 15-34)
16	1,1,2,2-tetrachloroethane	79-34-5			
17	1,1-dichloroethane	75-34-3			
18	1,1-dichloropropene	563-58-6			
19	1,2,3-trichloropropane	96-18-4			
20	1,3-dichloropropane	142-28-9			
21	1,3-dichloropropene	542-75-6			
22	2,2-dichloropropane	594-20-7			

Table 30. Contaminants Required Under the Existing Phase II/V Unregulated Monitoring Program

23	bromobenzene	108-86-1			
24	bromodichloromethane	75-27-4			
25	bromoform	75-25-2			
26	bromomethane	74-83-9			
27	chlorodibromomethane	124-48-1			
28	chloroethane	75-00-3			
29	chloroform	67-66-3			
30	chloromethane (methyl chloride)	74-87-3			
31	dibromomethane	74-95-3			
32	m-dichlorobenzene	541-73-1			
33	o-chlorotoluene	95-49-8			
34	p-chlorotoluene	106-43-4			

For comparison, it is assumed that if existing (Phase II/V) unregulated contaminant monitoring continues, all regulated systems would conduct the monitoring over three years within the 2000 to 2005 period; with ground water systems sampling once in one year, and surface water systems sampling four times during one year. (This period overlaps parts of two cycles of monitoring. However, systems that had completed the first round before 2000 would need to complete another round if this program was not replaced by the UCMR.) Total cost to small systems for the existing unregulated monitoring program are estimated at \$35.8 million. As seen in Section B of this document, the estimated cost to small systems for implementation of the proposed UCMR is \$99,310. Thus, under the UCMR, nationwide savings to small systems is estimated to be just over \$35.6 million. Annual per system costs *for those 800 small systems that participate in UCMR* monitoring will be reduced by approximately \$190 per year. Small systems will realize this savings because under the proposed program, none will be required to cover the cost of analysis for the unregulated contaminants, as many do under the existing program. Only those 800 systems that become part of the national representative sample will incur any costs at all, and those will be attributed to labor only.

Large systems would incur a \$13.0 million cost for this monitoring cycle of the existing unregulated monitoring program. Under the UCMR, large system costs are increased by almost \$14.0 million,

primarily due to the increase in laboratory analytical costs. Annual per system costs are increased by approximately \$1,000 per system under the UCMR program.

Baseline cost to the States is estimated to be \$7.5 million for the analogous monitoring cycle of 2000 to 2005. Under the UCMR, States are estimated to incur \$2.3 million in costs over the same period. Thus, the total savings to States under the UCMR is estimated to be \$5.2 million. This savings is attributed to a decrease in required labor. States will be collecting and reporting monitoring data from perhaps 30,000 fewer water systems, because only a representative sample of systems serving 10,000 or fewer people will be involved in the UCMR.

EPA baseline costs are estimated as a percentage of the overall drinking water program. Agency costs for running the existing program are estimated at \$1.9 million for the analogous period of 2000 to 2005. EPA costs are significantly increased under the UCMR, primarily because, as proposed, the Agency will fund all small system analytical and shipping costs.

The Agency notes that reductions in costs can also be attributed to the “Suspension of Unregulated Contaminant Monitoring Requirements for Small Public Water Systems (Direct Final Rule)” (64 FR 1499 (January 8, 1999)), which was issued in conjunction with the UCMR. The Direct Final Rule cancels the requirements for systems serving less than 10,000 people to monitor for another round of the existing list of unregulated contaminants, beginning in the first quarter of calendar year 1999. This cancellation was issued because monitoring for the existing contaminants would overlap with this revised program. Approximately two-thirds of systems serving between 3,300 and 10,000 will save the costs of monitoring under the existing program by the action of the Direct Final Rule (e.g., in 1999 and 2000), before the UCMR becomes effective, resulting in an approximate system savings of \$5.3 million.

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